INDEX OF AUTHORS[1]

Aaronson, S., 660
Ajl, Samuel J., 449
Allen, S. H. G., Jr., 184
Altenbern, Robert A., 567
Aronson, A. I., 102

Bartholomew, J. W., 77
Begel, Joseph S., 360
Bell, J. Frederick, 135
Bell, T. A., 586
Berendt, Richard F., 217
Bernheim, Frederick, 691
Bialy, J. J., 31
Booher, Zina K., 320
Bordner, Robert H., 16
Borek, Ernest, 72
Bornside, George H., 89
Bower, Raymond K., 496
Briefman, Louise, 236
Brock, Thomas D., 697
Brown, Eric R., 499

Cardella, Matteo A., 360
Carlin, Charles E., 409
Carnahan, James E., 121
Cary, Sylvia G., 43
Casida, L. E., Jr., 474
Castle, John E., 121
Chance, H. L., 629
Ciak, Jennie, 125
Clapper, William E., 493
Clark, J. B., 400
Cooper, Ruth E., 422
Cota-Robles, E. H., 243
Cynkin, Morris A., 331, 335

Dammin, Gustave J., 604
Dawes, E. A., 390
DeArmon, Ira A., Jr., 300
DeGiovanni, Rosalie, 510, 514
Delwiche, E. A., 331
Demain, Arnold L., 46, 517
Demetroulakos, L. J., 702
DeTurk, William E., 691
Dooley, Elmo S., 719
Douglas, H. C., 85
Dressler, Harry R., 544
Duff, James T., 360
Dworkin, Martin, 592

Eaton, Muzza, 320
Edwards, Philip R., 9
Ellis, Evelyn Conner, 553
Ellis, R. H., 272
Erlandson, Arvid L., Jr., 253, 530
Etchells, J. L., 586
Evans, W. R., 586

Faber, John E., Jr., 43
Feldman, William, 26
Ferguson, Robert B., 366
Fernelius, Albert L., 300
Finkelstein, Harold, 77
Finkelstein, Richard A., 339
Fitz-James, P. C., 102, 369
Formal, Samuel B., 467, 604
Foster, E. M., 453
Foster, J. W., 592
Fox, Eugene N., 209

Galindo, Emma, 467
Gerhardt, Philipp, 1
Gezon, Horace M., 51, 56
Gibbons, Anna J., 489
Gibbs, Martin, 335
Gill, James W., 666
Gilmour, C. M., 31
Ginoza, Herbert S., 567
Goldschmidt, E. P., 265, 702
Gordon, Ruth E., 239
Gottfried, Carol, 360
Greer, Sheldon, 510
Greig, Margaret E., 489
Groman, Neal B., 320

Hahn, Fred E., 125
Hahon, Nicholas, 707
Halick, Paul, 316
Hamilton, P. B., 623
Hanka, L. J., 471
Hashimoto, Tadayo, 640, 647
Hedgecock, Loyd W., 345, 417
Hendlin, David, 46
Higuchi, Kiyoshi, 209, 409
Hill, Ruth F., 63
Hino, Seiichi, 403
Hiroki, H., 615
Hirschberg, Nell, 237
Hodge, Howard M., 258
Hogenkamp, H., 460
Hokama, Y., 130
Hollaender, Alexander, 190
Holms, W. H., 390
Holtman, D. Frank, 719
Hopkins, William J., 492
Howells, J. D., 305

[1] All entries indexed to first page of article.

Hoyer, Bill H., 135
Hungate, R. E., 713
Hurwitz, C., 11
Hyatt, Mildred T., 291

Isenberg, Henry D., 682
Ito, Yohei, 612

Jeffries, Charles D., 719
Johnson, Mary K., 98
Juarez, William J., 367

Kamahora, Takeshi, 535
Katznelson, H., 540
Kelley, L. M., 326
Kenner, Bernard A., 16
Kiggins, E. M., 205
King, Kendall W., 666
Klungsoyr, S., 31
Knight, S. G., 623
Koike, Masaatsu, 224
Kozikowski, Edmund, 707

LaBrec, E. H., 604
Landau, Bernard, 414
Landman, Otto E., 567
Lecce, Eileen, 586
Lederberg, Joshua, 143
Leise, Joshua M., 422
Lester, Gabriel, 426
Levin, Hilda, 429
Levinson, Hillel S., 291
Lichstein, Herman C., 366
Lincoln, Ralph E., 300
Lindberg, Robert B., 43
Lindstrom, E. S., 305
Lively, David H., 436
Lockhart, W. R., 471
Lowenthal, Joseph P., 467

McCleskey, C. S., 98
McKee, Max T., 135
MacDonald, Russell E., 1
MaciasR, Frank M., 561
Mackey, William H., 253, 530
MacLeod, Robert A., 460
Marr, Allen G., 243
Maruyama, Yoichi, 523
Matney, Thomas S., 180
Meade, Grace H., 493
Metcalfe, S. Nicholas, Jr., 258, 436
Mihm, Joan M., 239
Miyamura, Sadao, 617
Molomut, Norman, 584
Moody, Max D., 499, 553
Mudd, Stuart, 118, 224

Nakamura, B., 615
Namioka, Shigeo, 9
Naylor, H. B., 640, 647
Nichols, Eltha G., 367
Nickerson, Walter J., 161, 283, 674
Nilson, E. H., 243
Noe, Frederick F., 674
Nye, Joseph F., 654

O'Barr, Thomas P., 429
O'Brien, E., 611
Ogg, James E., 190
Onofrey, E., 460

Pan, Sylvia F., 51, 56
Payne, John I., 118
Payne, William J., 240
Peacock, Carl L., 167
Pengra, Robert M., 21
Perlman, D., 611
Peterson, W. J., 586
Pine, Leo, 167
Pine, Martin J., 356
Pital, Abe, 422
Plastridge, W. N., 205
Platt, T. B., 453
Powelson, Dorothy, 184
Provvidenti, Margaret L., 38

Ratner, Milton, 707
Reynolds, Howard, 429
Richardson, Robert L., 89
Riddle, Jackson W., 16
Ridgway, George J., 85
Rights, F. L., 175
Rockwood, Sue W., 16
Rodriguez, E., 660
Romano, Antonio H., 161, 283
Rosano, C. L., 11
Rosenfield, Richard, 474
Roth, Norman G., 436
Rust, James, Jr., 449
Ryan, Ann, 72

Sakanoue, M., 615
Sakazaki, Riichi, 9
Sall, Theodore, 118
Salle, A. J., 130
Sanchez-Marroquin, A., 383
Sarles, W. B., 272
Schick, Martin, 414
Schneider, H., 604
Sebek, Oldrich K., 199
Shankel, Delbert M., 180
Shepard, Maurice C., 351
Shulls, W. A., 175

Sih, Charles J., 623
Singer, Solomon, 612
Sloan, James D., Jr., 291
Smith, Charles G., 577
Smith, Chauncey W., 499
Smith, Paul H., 713
Sohler, Arthur, 283
Spaulding, Earle H., 278
Spiegelman, S., 102
St. Clair, Jacqueline, 143
Steinkraus, Keith H., 38
Sulkin, S. Edward, 339
Sundheim, Lila H., 682
Swendseid, Marian E., 654
Szeto, Isabel L., 316
Szulmajster, Jekisiel, 633

Takebe, Itaru, 523
Taylor, G. W., 265, 702
Terai, Takeo, 535
Treece, E. Lee, 499
Tschudy, Donald P., 414
Tsurumizu, T., 615
Tyrrell, Elizabeth A., 1

Updyke, Elaine L., 553

Vatter, A. E., 480

Walk, Robert A., 489
Wang, C. H., 31
Wasserman, Aaron E., 492
Wayne, Lawrence G., 367
Weeks, O. B., 326
Weiss, Emilio, 544
Wilkes, Charles E., 300
Wilson, P. W., 21, 403
Woebke, J., 449
Woese, C. R., 5
Wolfe, R. S., 480
Won, William D., 237
Wyss, Orville, 180

Yamamoto, Nobuto, 443
Yamamura, Yuichi, 535
Yanagita, Tomomichi, 523
Yaw, Katherine E., 236
Yee, Robert B., 51, 56
Yoshida, Akira, 224

Zahler, Stanley A., 310
Zamenhof, Stephen, 510, 514
Zelle, M. R., 190
Zubrzycki, Leonard, 278

INDEX TO DATE OF ISSUE

Month	Date of Issue	Pages
January	2/11/58	1–120
February	3/6/58	121–242
March	4/4/58	243–368
April	4/29/58	369–494
May	5/21/58	495–614
June	6/27/58	615–736

INDEX OF SUBJECTS[1]

Acetate, oxidation of, by *Vibrio fetus*, 205
Acetoin synthesis by *Bacillus cereus*, 305
Acridine dyes, photodynamic inactivation of coli bacteriophage and, 443
Actidione (cycloheximide), effect of, on yeast fermentation, 489
Actinomycetales, cell composition of, 283
Aerobacter aerogenes, metabolism of bile acids by, 130
——, nitrogen fixation by, 21
——, potassium requirement of, 426
Aerosols, properties of *Pasteurella pestis* recovered from, 217
Agglutination technique for differentiation of *Mima polymorpha* from Neisseriae, 43
Agrobacterium radiobacter, metabolism of carbohydrates by, 540
——, potassium requirement of, 426
— *rubi*, metabolism of carbohydrates by, 540
— *tumefaciens*, metabolism of carbohydrates by, 540
Alanine in cell walls of Actinomycetales, 283
—, utilization of, by *Streptomyces fradiae*, 161
Amino acid pools of chorioallantoic membranes, effect of influenza virus on, 175
— acids and the nutrition of *Pasteurella pestis*, 409
—— in cell walls of Actinomycetales, 283
——, interrelationships of, in nutrition of *Leuconostoc mesenteroides*, 429
——, oxidation of, by *Vibrio fetus*, 205
——, reduction of, in blood of chicks treated with *Salmonella pullorum*, 719
——, utilization of, by *Streptomyces fradiae*, 161
γ-Aminobutyric acid, metabolism of, by *Pseudomonas aeruginosa*, 674
——, production of, from nicotine, 474
Aminopterin, mutant of *Neurospora crassa* resistant to, 654
Aminosalicylate-inhibition of *Mycobacterium tuberculosis*, methionine antagonism of, 417
p-Aminosalicylic acid, resistance of *Mycobacterium tuberculosis* to, 345
Ammonia, effect of, on assimilation of nitrite and nitrate by a mycobacterium, 691
Antibiotic-resistant lactobacilli, isolation of, 272
Antibiotics, additive effect of, 125
—, effect of, on growth of *Escherichia coli*, 125
—, mechanism of action of, 125
—, neomycin, structure of, and its action, 199
Antigenic configuration of *Pasteurella pestis* recovered from aerosols, 217
Arabinose in cell walls of Actinomycetales, 283
Arginine, reduction of, in blood of chicks treated with *Salmonella pullorum*, 719
—, utilization of, by *Streptomyces fradiae*, 161
Arizona group, new serotype of, 9
Arthrospore formation of *Coccidioides immitis*, nutrition of, 265
Aryl sulfatase in aerobic Actinomycetales, 367
Aspartic acid, role of in nutrition of *Shigella flexneri*, 253
Assay of bound biotin, 366
Aureomycin, inhibition of respiration in *Shigella flexneri*, 56
Avery, Oswald Theodore (1877–1955), Memorial to, 495
Azotobacter agilis, characteristics of submicroscopic particles in extracts of, 243
——, submicroscopic particles in extracts of, 243

Bacillus anthracis, differential diagnosis of, from *Bacillus cereus* and *Bacillus cereus* var. *mycoides*, 499
——, identification of, by infrared spectrophotometry, 16
——, probit method to interpret thermal inactivation of spores of, 300
——, sporulation of, changes occurring during, 436
— *brevis*, medium for studies with, 517
——, X-ray sensitivity of spores of, 5
— *cereus*, acetoin synthesis by, 305
——, deoxyribose-phosphate synthesis by, 305
——, differential diagnosis of, from *Bacillus anthracis* and *Bacillus cereus* var. *mycoides*, 499
——, explosion phenomenon in, study of, 640
—— var. *mycoides*, differential diagnosis of, from *Bacillus anthracis* and *Bacillus cereus*, 499
——, X-ray sensitivity of spores of, 5
— *macerans*, medium for studies with, 517
— *megaterium*, deoxyribonucleic acid in protoplasts of, 102
——, nuclear bodies from protoplasts of, 102
——, potassium requirement of, 426
——, protoplasts of, morphology and nucleic acid content of, 369
——, ribonucleic acid in protoplasts of, 102
——, spore germination and sporogenesis of, 118
——, X-ray sensitivity of spores of, 5
— *mesentericus*, X-ray sensitivity of spores of, 5
— *mycoides*, X-ray sensitivity of spores of, 5
— *natto*, medium for studies with, 517
— *polymyxa*, a bacillus resembling, nitrogen fixation by, 403
— *popilliae*, nutrition of, 38
——, variability among strains of, 38

[1] All entries indexed to first page of article.

— species, nitrogen fixation by, 403
— *subtilis*, growth stimulation of, by glycine peptides, 46
——, media for quantitative studies with, 517
——, potassium requirement of, 426
—— var. *globigii*, growth of, in a biphasic system, 1
——— *niger*, probit method to interpret thermal inactivation of spores of, 300
———, sporulation of, changes occurring during, 436
——, X-ray sensitivity of spores of, 5
— *terminalis*, biotin content of, 366
Bacterial identification by infrared spectrophotometry, 16
Bactericidal action of chloramphenicol, 617
Bacteriophage, photodynamic inactivation of coli, 443
— production by lysogenic *Corynebacterium diphtheriae*, 320
— ϕX-174, properties of, 310
— S13, properties of, 310
BCG strain of *Mycobacterium tuberculosis*, assimilation of nitrite and nitrate by, 691
Bile acids, metabolism of, by enterobacteria and *Streptococcus faecalis*, 130
Biotin, assay of bound, 366
—, requirements of, for nitrogen fixation, 121
Biphasic system for growing bacteria, 1
Blood of chicks treated with endotoxin of *Salmonella pullorum*, alteration of, 719
Botulinum toxin, type C, production and purification of, 360
Bromide, effect of, on chloramphenicol fermentation, 577
Brucella abortus, growth of, in a biphasic system, 1
——, utilization of carbohydrates by, 422
— *melitensis*, growth of, in a biphasic system, 1
——, utilization of carbohydrates by, 422
— *suis*, growth of, in a biphasic system, 1
——, utilization of carbohydrates by, 422
Butyrivibrio, nutrition of the genus, 666

C^{14}-labeled glucose, dissimilation of, by *Serratia marcescens*, 492
— pentoses, metabolism of, by clostridia, 335
Carbohydrate oxidation by *Sarcina lutea*, 390
— utilization by brucellae, method for determination of, 422
——— *Shigella flexneri*, 530
Carcinoma cells (HeLa), growth of pleuropneumonialike organisms in, 351
Cartenoids in members of genus *Rhodotorula*, 586
Caryophanon latum, characteristics of, 326
——, relation of, to *Caryophanon tenue*, 326
Catabolism of glucose in *Streptomyces griseus*, 31
Cell clumping in *Nocardia corallina*, 400
— wall staining, relationship of, to Gram differentiation, 77
— walls of Actinomycetales, composition of, 283
Cesium, utilization of, by bacteria, 426
Chemostat, use of, for fixed cultures, 278
Chick embryo entodermal cells, growth of *Rickettsia prowazeki* in, 544
Chicks, blood of, alteration of, by endotoxin of *Salmonella pullorum*, 719
Chloramphenicol, additive effect of, with other antibiotics, 125
—, bactericidal action of, for *Escherichia coli*, 617
—, effect of, on synthesis of fraction I antigen by *Pasteurella pestis*, 209
— fermentation, effect of halogens on, 577
Chorioallantoic membrane, growth of variola virus on, 707
— membranes, effect of influenza virus on amino acid pools of, 175
Chlorobium limicola, structure of, 480
Chlortetracycline, additive effect of, with other antibiotics, 125
Cholic acid, metabolism of, by enteric bacteria, 130
Chromatium species, structure of, 480
Chromatograms, filter paper, use of, in reading Wassermann reaction, 612
Citrovorum factor in *Gaffkya homari*, 660
Clostridia, fermentation of creatinine by, 633
Clostridium beijerinckii, metabolism of pentoses by, 335
— *botulinum*, culture of, with controlled pH, 135
——, nutrition of type C, 360
——, type C toxin, immunity to, 360
— *butylicum*, metabolism of pentoses by, 335
— *pasteurianum*, nitrogen fixation requirements of, 121
— *perfringens*, metabolism of pentoses by, 331, 335
——, phosphopentoisomerase in, 331, 335
——, ribokinase in, 331, 335
— *sporogenes*, electron microscopic studies on sporulation of, 647
Coagulase negative staphylococci, characteristics of, in serum-soft agar, 339
— positive staphylococci, characteristics of, in serum-soft agar, 339
—, production of staphylococcal, 316, 339
Coccidioides immitis, biochemical changes in medium during growth of, 702
— *immitis*, nutrition of, 265
Colloids, flocculation of bacteria by hydrophilic, 258
Colonies, giant, of a pseudomonad, 89
Colony formation of *Bacillus subtilis*, media for, 517
Corynebacterium diphtheriae, growth of, in a biphasic system, 1
——, studies of mono- and polylysogenic, 320
— *fascians*, metabolism of carbohydrates by, 540

— *flaccumfaciens*, metabolism of carbohydrates by, 540
— *michiganense*, metabolism of carbohydrates by, 540
Creatinine, bacterial fermentation of, 633
Cycloheximide (actidione), effect of, on yeast fermentation, 488
Cytochrome in submicroscopic particles of *Azotobacter agilis*, 243
— oxidase of *Penicillium chrysogenum*, 623
Cytoplasmic particles in yeast, inositol in, 85

Dehydrogenase, glutamic, in *Streptomyces fradiae*, 161
Deoxycholic acid, metabolism of, by enteric bacteria, 130
Deoxyribose-phosphate synthesis by *Bacillus cereus*, 305
2-Desoxyglucose, inhibitory effects of, on growth of *Escherichia coli*, 414
Desoxyribonucleic acid content of *Bacillus megaterium*, 369
—— in protoplasts of *Bacillus megaterium*, 102
Diaminohexose portion of neomycin, antibiotic effect of, 199
Diaminopimelic acid, effect of, on mutants of *Escherichia coli*, 143
—— in cell walls of Actinomycetales, 283
Diethylstibestrol, assay of, using *Staphylococcus aureus*, 471
—, inhibitory effect of, on *Staphylococcus aureus*, 471
Dihydrostreptomycin inactivation of *Escherichia coli*, phosphate reversal of, 11
Diphosphopyridine nucleotide, inhibition of, by plague toxin, 449
Dyes, photodynamic inactivation of coli bacteriophage and, 443

Eggs, embryonated, growth of variola virus on, 707
Electron micrographs of *Nocardia corallina*, 400
— microscopic studies on sporulation of *Clostridium sporogenes*, 647
Embden-Meyerhof-Parnas pathway of metabolism in clostridia, 335
Endotoxin of *Salmonella pullorum*, alterations of blood of chicks treated with, 719
Enteric bacteria, metabolism of bile acids by, 130
Enterobacteriaceae, metabolism of bile acids by, 130
Enzyme, pyrophosphatase in extracts of *Bacillus megaterium*, 291
Epidermoid carcinoma cells (HeLa), growth of pleuropneumonialike organisms in, 351
Epithelioid cell response in guinea pig tuberculosis, stimulation of, 584
Erwinia amylovora, metabolism of carbohydrates by, 540
— *carotovora*, metabolism of carbohydrates by, 540
——, potassium requirement of, 426
Escherichia coli, bactericidal action of chloramphenicol for, 617
——, conversion of cells and protoplasts of, to L-forms, 567
——, detection of indole in cultures of, 682
——, effect of antibiotics on growth of, 125
——, —— fixatives on stainable material in, 629
——, —— hexose analogues on growth of, 414
——, glucose oxidation in dividing and nondividing cells of, 184
——, growth of, in a biphasic system, 1
——, metabolism of bile acids by, 130
——, mutant of, with unbalanced ribonucleic acid synthesis, 72
——, new serotypes (0125:B15:H2 and 0.126:B16:H7) of, 615
——, nonlethal mutations induced in, by ultraviolet light, 180
—— phage T1, study of, 63
——, phosphate reversal of the dihydrostreptomycin inactivation of, 11
——, photodynamic inactivation of bacteriophage for, 443
——, photoreactivation of, exposed to ultraviolet light, 190
——, potassium requirement of, 426
——, protoplasts and L-type growth of, 143
——, study of specific gene unstabilization in, 510, 514
——, survival of unstable strains of, 514
——, synchronous growth of, cellular response to deleterious agents during growth of, 523
——, use of, to assay biotin, 366
——, utilization of magnesium ribonucleate by, 611
— *freundii*, detection of indole in cultures of, 682
——, flocculation of, by hydrophilic colloids, 258
Ethane, microorganisms which utilize, 592
"Explosion phenomenon" in ultrathin sections of bacteria, 640

Flavobacterium species, growth response of, to surface active agents and nucleotides, 460
Flocculation of bacteria by hydrophilic colloids, 258
Fluoracetate, inhibition of glutamate metabolism in *Shigella flexneri* by, 51, 56
Fluorescent antibody, grouping streptococci with, 553
Folic acid, study of in *Neurospora crassa*, 654
—— -vitamins, relationship between, and purines in *Gaffkya homari*, 660

Formate, methane fermentation of, by *Methanobacillus omelianskii*, 356
Fraction I antigen of *Pasteurella pestis*, synthesis of, 209
Fructose, utilization of, by *Shigella flexneri*, 530

Gaffkya homari, relationship between purines and folic acid-vitamins in, 660
Galactose in cell walls of Actinomycetales, 283
—, utilization of, by *Shigella flexneri*, 530
Galacturonic acid, conversion of, to glucuronic acid, by *Serratia marcescens*, 240
Gene unstabilization in *Escherichia coli*, study of specific, 510, 514
Genetic instability of *Escherichia coli*, study of, 510, 514
Giant colony patterns of a pseudomonad, 89
Gluconate, metabolism of, by *Leuconostoc mesenteroides*, 98
Glucosamine, effects of, on growth of *Escherichia coli*, 414
Glucose catabolism in *Streptomyces griseus*, 31
—, C^{14}-labeled, dissimilation of, by *Serratia marcescens*, 492
—, —, oxidation of, by *Streptomyces griseus*, 31
—, metabolism of, by *Sarcina lutea*, 390
— —, products of, by homofermentative streptococci, 453
— oxidation in dividing and nondividing cells of *Escherichia coli*, 184
—, utilization of, by *Shigella flexneri*, 530
Glucuronic acid, production of, by *Serratia marcescens*, 240
Glutamate, inhibition of, in *Shigella flexneri*, by aureomycin, 56
—, oxidation of, by *Shigella flexneri*, 51, 56
Glutamic acid in cell walls of Actinomycetales, 283
— — production by *Streptomycetes*, 614
— —, utilization of, by *Streptomyces fradiae*, 161
— dehydrogenase in *Streptomyces fradiae*, 161
Glycine peptides, growth stimulation of *Bacillus subtilis* by, 46
—, reduction of, in blood of chicks treated with *Salmonella pullorum*, 719
Glycocholic acid, metabolism of, by enteric bacteria, 130
Gram stain differentiation, relationship of, to cell wall staining, 77
Grouping streptococci with fluorescent antibody, 553
Guinea pigs, shigella infections in, 604

Halogens, effect of, on the chloramphenicol fermentation, 577
Hansenula wingei, mating reaction in, 697
Haploid mating types in *Hansenula wingei*, 697
HeLa cells, growth of pleuropneumonialike organisms in, 351
Herellea species, agglutination technique for differentiation of, from Neisseriae, 43
Hexose analogues, effect of, on growth of *Escherichia coli*, 414
Histidine, utilization of, by *Streptomyces fradiae*, 161
Histoplasma capsulatum, conversion of, from mycelial to yeast phase, 167
Hydrogen chloride method of staining *Escherichia coli*, 629
—, microorganisms which utilize, 592
Hydrogenase in submicroscopic particles of *Azotobacter agilis*, 243
Hydrogenomonas, relationship of genus to genus *Pseudomonas*, 592
Hydroxylamine, effect of, on assimilation of nitrite and nitrate by a mycobacterium, 691

Immunity to toxins of *Clostridium botulinum*, 360
Indole reactions in bacteria, 682
—, spot test for detection of, 682
Influenza virus, effect of, on amino acid pools of chorioallantoic membranes, 175
Infrared spectrophotometry, bacterial identification by, 16
Inositol, distribution of, in subcellular fractions of yeast, 85
Iron, requirements of, for nitrogen fixation, 121

Keto acid oxidation, inhibition of, by plague toxin, 449
Klebsiella pneumoniae, identification of, by infrared spectrophotometry, 16
Kloeckera brevis, distribution of inositol in, 85

L-type growth and protoplasts of *Escherichia coli*, 143
Lactobacilli, antibiotic resistant, 272
Lactobacillus arabinosus, use of, to assay biotin, 366
— *fermenti*, response of, to thiamin, effect of oleic acid on, 561
Leptospira agglutination tests, plastic trays for, 237
Leuconostoc mesenteroides, aerobic metabolism of, 98
— —, nutrition of, 429
Lysine, utilization of, by *Streptomyces fradiae*, 161
Lysozyme, effect of, on cell walls of Actinomycetales, 283

Magnesium, requirements of, for growth of *Coccidioides immitis*, 265
Malic dehydrogenase in *Mycobacterium avium*, 535
Manganese, requirements of, for pyrophosphatase of *Bacillus megaterium*, 291
Mannose, utilization of, by *Shigella flexneri*, 530

Marine bacteria, nutrition and metabolism of, 460
Mating reaction in *Hansenula wingei*, 697
Mechanism of glucose oxidation in dividing and nondividing cells of *Escherichia coli*, 184
Media for quantitative studies with *Bacillus subtilis*, 517
Medium for cultivation of *Pasteurella tularensis*, 237
Memorial to Oswald Theodore Avery, (1877–1955), 495
Methane fermentation of formate by *Methanobacillus omelianskii*, 356
— —, pathway of, 356
Methanobacillus omelianskii, methane fermentation of formate by, 356
Methanobacterium ruminantium n.sp., isolation and characterization of, 713
Methanogenic bacteria from rumen of cattle, isolation and characterization of, 713
Methionine, antagonism of, in aminosalicylate-inhibition of *Mycobacterium tuberculosis*, 417
—, reduction of, in blood of chicks treated with *Salmonella pullorum*, 719
Methylamine, effect of, on assimilation of nitrite and nitrate by a mycobacterium, 691
N-Methyl-hydantoin, bacterial formation of, from creatinine, 633
Micrococcus lysodeikticus, growth of, in a biphasic system, 1
Milky disease organisms, variability of, 38
Mima polymorpha, slide agglutination technique for differentiation of, from Neisseriae, 43
Monosaccharides from capsule of *Pasteurella multocida*, 236
Morphology of protoplasts of *Bacillus megaterium*, 369
Mucinase from *Shigella flexneri*, serology of, 467
Mutant of *Neurospora crassa* resistant to aminopterin, 654
— — phage T1, 63
Mutations induced by ultraviolet light without lethality, 180
Mycelial phase of *Histoplasma capsulatum*, conversion of to yeast phase, 167
Mycobacterium avium, lack of aryl sulfatase in, 367
— —, malic dehydrogenase in, 535
— —, tellurite reductase from, 535
— *chelonei*, polyphosphate metabolism in, 224
— *fortuitum*, aryl sulfatase in, 367
— *phlei*, aryl sulfatase in, 367
— *rhodochrous*, lack of aryl sulfatase in, 367
— *smegmatis*, aryl sulfatase in, 367
— —, utilization of magnesium ribonucleate by, 612
— species, non-lysis of, by lysozyme, 283
— *thamnopheos*, polyphosphate metabolism in, 224
— *tuberculosis*, antagonism of methionine in aminosalicylate-inhibition of, 417
— —, BCG strain, assimilation of nitrite and nitrate by, 691
— —, lack of aryl sulfatase in, 367
— —, resistance of, to *p*-aminosalicylic acid, 345

Necrology of Oswald Theodore Avery (1877–1955), 495
Neisseriae, differentiation of, from the genera *Mima* and *Herellea*, 43
Neomycin, structure of, and its action, 199
Neurospora crassa, study of folic acid in, 654
Newcastle disease virus, studies on, by plaque method, 496
Nicotine, oxidation of, to γ-aminobutyric acid, 474
Nitrate, assimilation of, by a mycobacterium, 691
Nitrite, assimilation of, by a mycobacterium, 691
Nitrogen fixation by *Aerobacter aerogenes*, 21
— — — a facultative bacillus, 403
— —, requirements of, 121
Nitrogenase system in *Aerobacter aerogenes*, 21
Nocardia asteroides, sporulation of, 239
— *corallina*, cell clumping in, 400
— species, non-lysis of, by lysozyme, 283
Nostoc muscorum, nitrogen fixation requirements of, 121
Nuclear bodies from protoplasts of *Bacillus megaterium*, 102
Nucleic acid content of protoplasts of *Bacillus megaterium*, 369
Nucleotides, growth response of a marine flavobacterium, to, 460
Nutrition of *Bacillus popilliae*, 38
— — *Clostridium botulinum*, type C, 360
— — *Coccidioides immitis*, 265
— — *Leuconostoc mesenteroides*, 429
— — marine bacteria, 460
— — *Pasteurella pestis*, 409
— — *Shigella flexneri*, 253
— — the genus *Butyrivibrio*, 666

Oleic acid, effect of, on response of *Lactobacillus fermenti* to thiamin, 561
Oxazine dyes, photodynamic inactivation of coli bacteriophage and, 443
Oxidase, cytochrome, of *Penicillium chrysogenum*, 623
Oxytetracycline, additive effect of, with other antibiotics, 125

Particles, submicroscopic, in extracts of *Azotobacter agilis*, 243
Pasteurella multocida, monosaccharides from capsule of, 236
— *pestis*, nutrition of, 409
— —, properties of, recovered from aerosols, 217
— —, synthesis of fraction I antigen by, 209

— *tularensis*, flocculation of, by hydrophilic colloids, 258
— —, medium for cultivation of, 237
Penicillin, effect of, on *Escherichia coli*, 143
—, mechanism of action of, 143
Penicillium chrysogenum, cytochrome oxidase of, 623
Pentose phosphate, conversion of, to hexose monophosphate, 331, 335
Pentoses, metabolism of by clostridia, 331, 335
Peptide, formation of, by *Coccidioides immitis*, 702
Peptides, glycine, growth stimulation of *Bacillus subtilis* by, 46
Peroxidase, in *Leuconostoc mesenteroides*, 98
pH, culture of *Clostridium botulinum* with controlled 135
Phage T1 for *Escherichia coli*, mutant of, 63
— — — — —, study of, 63
Phosphate reversal of the dihydrostreptomycin inactivation of *Escherichia coli*, 11
Phospholipid in submicroscopic particles of *Azotobacter agilis*, 243
Phosphopentoisomerase in *Clostridium perfringens*, 331, 335
Photodynamic inactivation of coli bacteriophage, 443
Photoreactivation of *Escherichia coli* exposed to ultraviolet light, 190
Photosynthetic bacteria, structure of, 480
Physiology of *Coccidioides immitis*, 702
Phytopathogenic bacteria, metabolism of carbohydrates by, 540
Plague toxin, inhibition of diphosphopyridine by, 449
— —, — — keto acid oxidation by, 449
Plaque method for studying Newcastle disease virus, 496
Plastic trays for leptospira agglutination tests, 237
Pleuropneumonialike organisms, growth of, in HeLa cells, 351
Polyphosphate as accumulator of phosphorus and energy, 224
Polysaccharide, formation of, by *Coccidiodes immitis*, 702
Potassium, requirement for, by bacteria, 426
—, requirements of, for growth of *Coccidioides immitis*, 265
Probit method to interpret thermal inactivation of bacterial spores, 300
Proline, utilization of, by *Streptomyces fradiae*, 161
Propionibacterium pentosaceum, use of, to assay biotin, 366
Protein and ribonucleic acid synthesis in a mutant of *Escherichia coli*, 72
Proteus mirabilis, conversion of cells and protoplasts of, to L-form, 567
— *morganii*, flocculation of, by hydrophilic colloids, 258
— *vulgaris*, potassium requirement of, 426
— —, utilization of magnesium ribonucleate by, 612
Protoplasts and L-type growth of *Escherichia coli*, 143
— of *Bacillus megaterium*, morphology of, 369
— — — —, nuclear bodies from, 102
— — — —, nucleic acid content of, 369
— — *Proteus mirabilis* and *Escherichia coli*, conversion of to L-form, 567
Pseudomonas aeruginosa, γ-aminobutyric-glutamic acid transaminase in, 674
— —, growth of, in a biphasic system, 1
— —, metabolism of 2-pyrrolidone by, 674
— *angulata*, metabolism of carbohydrates by, 540
— *coronafaciens*, metabolism of carbohydrates by, 540
— *fluorescens*, potassium requirement of, 426
— *myxogenes*, giant colony patterns of, 89
— *pisi*, metabolism of carbohydrates by, 540
—, relationship of genus, to genus *Hydrogenomonas*, 502
— *syringae*, metabolism of carbohydrates by, 540
— *tabaci*, metabolism of carbohydrates by, 540
Pteroylglutamic acid, effect of, on growth of *Gaffkya homari*, 660
Purines, relationship between, and folic acid-vitamins in *Gaffkya homari*, 660
Pyrophosphatase in extracts of *Bacillus megaterium*, 291
2-Pyrrolidone, metabolism of, by *Pseudomonas aeruginosa*, 674
Pyruvate oxidation by *Streptococcus mitis* and *Streptococcus faecalis*, 493

Quinonimide dyes, photodynamic inactivation of coli bacteriophage and, 443

Receptor-destroying enzyme, production of, by *Vibrio comma*, 26
Reductase, tellurite, from *Mycobacterium avium*, 535
Resazurin, use of, to determine carbohydrate utilization by brucellae, 422
Rhodopseudomonas sphaeroides, structure of, 480
Rhodospirillum rubrum, structure of, 480
Rhodotorula aurantiaca, carotenoids in, 586
— *flava*, carotenoids in, 586
— *glutinis*, carotenoids in, 586
— — var. *rubescens*, carotenoids in, 586
— *minuta*, carotenoids in, 586
— *mucilaginosa*, carotenoids in, 586
— *pallida*, carotenoids in, 586
— *rubra*, carotenoids in, 586
Ribokinase in *Clostridium perfringens*, 331, 335
Ribonucleate, magnesium, bacterial utilization of, 611

Ribonucleic acid content of *Bacillus megaterium*, 360
— — in protoplasts of *Bacillus megaterium*, 102
— — synthesis, mutant of *Escherichia coli* with unbalanced, 72
Ribonucleoprotein in submicroscopic particles of *Azotobacter agilis*, 243
Ribose, metabolism of, by *Clostridium perfringens*, 331, 335
—, — —, — *Sarcina lutea*, 390
Rickettsia prowazeki, growth of, in chick embryo entodermal cells, 544
Rubidium, utilization of, by bacteria, 426
Rumen of cattle, isolation and characterization of methanogenic bacteria from, 713

Saccharomyces carlsbergensis, distribution of inositol in, 85
— *cerevisiae*, effect of actidione on, 489
— —, use of, to assay biotin, 366
Salmonella, a new serotype of the Arizona group of, 9
Salmonella enteritidis, metabolism of bile acids by, 130
— —, potassium requirement of, 426
— *pullorum*, endotoxin of, alterations of blood of chicks treated with, 719
— *typhimurium*, identification of, by infrared spectrophotometry, 16
— *typhosa*, growth of, in a biphasic system, 1
— —, metabolism of bile acids by, 130
— —, properties of ϕX-174 for, 310
Sarcina lutea, metabolism of, 390
Serology of mucinase from *Shigella flexneri*, 467
Serotype of the Arizona group, a new, 9
Serotypes, new (0125:B15:H2 and 0126:B16:H7), of *Escherichia coli*, 615
Serratia marcescens, conversion of galacturonic to glucuronic acid by, 240
— —, flocculation of by hydrophilic colloids, 258
— —, glucose dissimilation by, 492
— —, growth of, in a biphasic system, 1
— —, identification of, by infrared spectrophotometry, 16
— —, potassium requirement of, 426
Shigella infections in guinea pigs, 604
Shigella flexneri, carbohydrate utilization by, 530
— —, growth of, in a biphasic system, 1
— —, infections in guinea pigs with, 604
— —, nutrition of, 253
— —, oxidation of glutamate by, 51, 56
— —, serology of mucinase from, 467
— *paradysenteriae*, properties of S13 phage for, 310
— *sonnei*, metabolism of bile acids by, 130
— —, potassium requirement of, 426
Slime as a factor in clumping of *Nocardia corallina*, 400
Spore germination in *Bacillus megaterium*, 118
Spores, bacterial, X-ray sensitivity of, 5
— of *Bacillus megaterium*, pyrophosphatase in, 291
—, probit method to interpret thermal inactivation of, 300
Sporogenesis in *Bacillus megaterium*, 118
Sporulation of *Bacillus popilliae*, 38
— — — species, 436
— — *Clostridium sporogenes*, 647
— — *Nocardia asteroides*, 239
Stain, Gram and cell wall, relationship of, 77
Staphylocoagulase, production of, 316, 339
Staphylococci, characteristics of coagulase positive and negative, in serum-soft agar, 339
—, production of coagulase by, 316, 339
Staphylococcus aureus, assay of stilbestrol with, 471
— —, growth of, in a biphasic system, 1
— —, inhibition of, by stilbestrol, 471
— —, production of coagulase by, 316, 339
— —, utilization of magnesium ribonucleate by, 611
Stilbestrol, assay of, using *Staphylococcus aureus*, 471
—, inhibitory effect of, on *Staphylococcus aureus*, 471
Streptococci, grouping of, with fluorescent antibody, 553
Streptococcus cremoris, products of glucose metabolism by, 453
— *durans*, products of glucose metabolism by, 453
— *faecalis*, metabolism of bile acids by, 130
— —, products of glucose metabolism by, 453
— —, pyruvate oxidation by, 493
— *lactis*, products of glucose metabolism by, 453
— *liquefaciens*, products of glucose metabolism by, 453
— *mitis*, pyruvate oxidation by, 493
— *pyogenes*, growth of, in a biphasic system, 1
— *thermophilus*, products of glucose metabolism by, 453
Streptomyces annulatus, glutamic acid production by, 611
— *aureofaciens*, glutamic acid production by, 611
— *cinnamonensis*, characteristics of, 383
— *fradiae*, characteristics of, 383
— —, glutamic acid production by, 611
— —, utilization of amino acids by, 161
— *griseus*, glucose catabolism in, 31
— —, glutamic acid production by, 611
— *lavendulae*, characteristics of, 383
— *olivaceus*, glutamic acid production by, 611
— *rimosus*, glutamic acid production by, 611
— species, effect of lysozyme on cell wall of, 283
— *venezuelae*, characteristics of, 383
— *virginiae*, characteristics of, 383
Streptomycetes, glutamic acid production by, 611
Streptomycin reaction, mechanism of, 11

—resistant lactobacilli, isolation of, 272
Sulfatase, aryl, in aerobic Actinomycetales, 367
Surface active agents, growth response of a marine flavobacterium to, 460
Synchronous growth of *Escherichia coli*, cellular response to deleterious agents during growth, 523

Taurocholic acid, metabolism of, by enteric bacteria, 130
Tellurite reductase from *Mycobacterium avium*, 535
Temperature, effect of, on synthesis of fraction I antigen by *Pasteurella pestis*, 209
Terminal respiration of *Sarcina lutea*, 390
Tetracycline-resistant lactobacilli, isolation of, 272
Thiamin, response of *Lactobicillus fermenti* to, effect of oleic acid on, 561
Thiazine dyes, photodynamic inactivation of coli bacteriophage and, 443
Toxin, botulinum type C, production and purification of, 360
Transaminase, γ-aminobutyric-glutamic acid, in *Pseudomonas aeruginosa*, 674
Transketolase-transaldolase sequence in metabolism of clostridia, 335
Tricarboxylic acid cycle in *Sarcina lutea*, 390
— — — — *Shigella flexneri*, 51, 56
— —, operation of, in *Vibrio fetus*, 205
Tuberculosis in the guinea pig, stimulation of epithelioid cell response in, 584
Type C botulinum toxin, production and purification of, 360

Ultraviolet light, nonlethal, mutations induced by, 180
— —, photoreactivation of *Escherichia coli* exposed to, 190

Variability among strains of *Bacillus popilliae*, 38
Variola virus, growth of, on embryonated eggs, 707
Vegetative cells of *Bacillus megaterium*, pyrophosphatase in, 291
Vibrio cholerae, *see Vibrio comma*.
— *comma*, production of receptor-destroying enzyme by, 26
— *fetus*, metabolic activities of, 205
Virus, influenza, effect of, on amino acid pools of chorioallantoic membranes, 175
—, Newcastle disease, plaque method for studying, 496
—, variola, growth of, on embryonated eggs, 707

Wassermann reaction, use of filter paper chromatograms in reading, 612

Xanthomonas begoniae, metabolism of carbohydrates by, 540
— *campestris*, metabolism of carbohydrates by, 540
— *carotae*, metabolism of carbohydrates by, 540
— *cerealis*, metabolism of carbohydrates by, 540
— *corylina*, metabolism of carbohydrates by, 540
— *cucurbitae*, metabolism of carbohydrates by, 540
— *juglandis*, metabolism of carbohydrates by, 540
— *maculafoliagardeniae*, metabolism of carbohydrates by, 540
— *malvacearum*, metabolism of carbohydrates by, 540
— *pelargonii*, metabolism of carbohydrates by, 540
— *phaseoli*, metabolism of carbohydrates by, 540
— *pruni*, metabolism of carbohydrates by, 540
— *vesicatoria*, metabolism of carbohydrates by, 540
X-ray sensitivity of bacterial spores, 5
Xylose and the nutrition of *Pasteurella pestis*, 409

Yeast, distribution of inositol in subcellular fractions of, 85
— fermentation, effect of actidione on, 489
—, mating types in, 607
— phase of *Histoplasma capsulatum*, 167

Zinc, requirements of, for growth of *Coccidioides immitis*, 265

CONTENTS

No. 1, JANUARY 1958

Biphasic System for Growing Bacteria in Concentrated Culture. Elizabeth A. Tyrrell, Russell E. Mac Donald, and Philipp Gerhardt 1–4

Comparison of the X-Ray Sensitivity of Bacterial Spores. C. R. Woese 5–8

A New Serotype of the Arizona Group. Riichi Sakazaki, Shigeo Namioka, and Philip R. Edwards 9–10

Studies on Mechanism of the Streptomycin Reaction. I. Phosphate Reversal of the Dihydrostreptomycin Inactivation of *Escherichia coli*. C. Hurwitz and C. L. Rosano 11–15

Bacterial Identification by Infrared Spectrophotometry. II. Effect of Instrumental and Environmental Variables. Bernard A. Kenner, Jackson W. Riddle, Sue W. Rockwood, and Robert H. Bordner 16–20

Physiology of Nitrogen Fixation by *Aerobacter aerogenes*. Robert M. Pengra and P. W. Wilson 21–25

Production of Receptor-Destroying Enzyme by *Vibrio comma* in Synthetic Medium. William Feldman 26–30

Studies on the Biochemistry of Streptomyces. III. Glucose Catabolism in *Streptomyces griseus*. C. H. Wang, J. J. Bialy, S. Klungsoyr, and C. M. Gilmour 31–37

Studies on the Milky Disease Organisms. III. Variability among Strains of *Bacillus popilliae* Sporulating on Artificial Media. Keith H. Steinkraus and Margaret L. Provvidenti 38–42

Slide Agglutination Technique for the Rapid Differentiation of *Mima polymorpha* and Herellea from the Neisseriae. Sylvia G. Cary, Robert B. Lindberg, and John E. Faber, Jr. 43–45

Growth Stimulation of a Strain of *Bacillus subtilis* by Glycine Peptides. Arnold L. Demain and David Hendlin 46–50

Studies on the Metabolism of Shigella. II. The Oxidation of Glutamate by *Shigella flexneri*. Robert B. Yee, Sylvia F. Pan, and Horace M. Gezon 51–55

Studies on the Metabolism of Shigella. III. The Inhibition of the Oxidation of Glutamate by Aureomycin. Robert B. Yee, Sylvia F. Pan, and Horace M. Gezon 56–62

Comparative Study of *Escherichia coli* Phage T1 and a Plaque Type Mutant. Ruth F. Hill 63–71

Studies on a Mutant of *Escherichia coli* with Unbalanced Ribonucleic Acid Synthesis. II. The Concomitance of Ribonucleic Acid Synthesis with Resumed Protein Synthesis. Ernest Borek and Ann Ryan 72–76

Relationship of Cell Wall Staining to Gram Differentiation. J. W. Bartholomew and Harold Finkelstein 77–84

Distribution of Inositol in Subcellular Fractions of Yeast Cells. George J. Ridgway and H. C. Douglas 85–88

Giant Colony Patterns Exhibited by a Pseudomonad. George H. Bornside and Robert L. Richardson 89–97

Further Studies on the Aerobic Metabolism of *Leuconostoc mesenteroides*. Mary K. Johnson and C. S. McCleskey 98–101

Isolation and Characterization of Nuclear Bodies from Protoplasts of *Bacillus megaterium*. S. Spiegelman, A. I. Aronson, and P. C. Fitz-James 102–117

Note:

Spore Germination and Sporogenesis in *Bacillus megaterium*. Stuart Mudd, John I. Payne, and Theodore Sall 118–119

No. 2, FEBRUARY 1958

Some Requirements of Biological Nitrogen Fixation. James E. Carnahan and John E. Castle 121–124

Mechanisms of Action of Antibiotics. I. Additive Action of Chloramphenicol and Tetracyclines on the Growth of *Escherichia coli*. Jennie Ciak and Fred E. Hahn 125–129
Studies on the Metabolism of Bile Acids by the Members of the Enterobacteriaceae and *Streptococcus faecalis*. Y. Hokama and A. J. Salle 130–134
Culture of *Clostridium botulinum* Type C with Controlled pH. Max T. McKee, J. Frederick Bell, and Bill H. Hoyer 135–142
Protoplasts and L-Type Growth of *Escherichia coli*. Joshua Lederberg and Jacqueline St. Clair 143–160
Utilization of Amino Acids as Carbon Sources by *Streptomyces fradiae*. Antonio H. Romano and Walter J. Nickerson 161–166
Studies on the Growth of *Histoplasma capsulatum*. IV. Factors Influencing Conversion of the Mycelial Phase to the Yeast Phase. Leo Pine and Carl L. Peacock 167–174
Effect of PR-8 Influenza Virus Infection on the Free Amino Acid Pools of Chorioallantoic Membranes. W. A. Shulls and F. L. Rights 175–179
Mutations Induced by Ultraviolet Light without Attendant Lethality. Thomas S. Matney, Delbert M. Shankel, and Orville Wyss 180–183
Pathways of Glucose Oxidation in Dividing the Nondividing Cells of *Escherichia coli*. S. H. G. Allen, Jr. and Dorothy Powelson 184–189
Photoreactivation of Induced Mutation and Inactivation of *Escherichia coli* Exposed to Various Wave Lengths of Monochromatic Ultraviolet Radiation. M. R. Zelle, James E. Ogg, and Alexander Hollaender 190–198
A Correlation between the Structure of Neomycin B and Its Action on Bacteria. Oldrich K. Sebek 199–204
Some Metabolic Activities of *Vibrio fetus* of Bovine Origin. E. M. Kiggins and W. N. Plastridge 205–208
Synthesis of the Fraction I Antigenic Protein by *Pasteurella pestis*. Eugene N. Fox and Kiyoshi Higuchi 209–216
Some Physiological and Immunological Properties of *Pasteurella pestis* Recovered from Aerosols. Richard F. Berendt 217–223
Polyphosphate as Accumulator of Phosphorus and Energy. Stuart Mudd, Akira Yoshida, and Masaatsu Koike 224–235

Notes:

Monosaccharides Isolated from the Capsule of *Pasteurella multocida*. Louise Briefman and Katherine E. Yaw 236
Direct Performance and Darkfield Readings of Leptospira Tests in Plastic Trays with Depressions. Nell Hirschberg 237
New Medium for the Cultivation of *Pasteurella tularensis*. William D. Won 237–239
Sporulation by Two Strains of *Nocardia asteroides*. Ruth E. Gordon and Joan M. Mihm 239–240
Apparent Conversion of Galacturonic to Glucuronic Acid by *Serratia marcescens*. William J. Payne 240–241

No. 3, March 1958

Submicroscopic Particles in Extracts of *Azotobacter agilis*. E. H. Cota-Robles, Allen G. Marr, and E. H. Nilson 243–252
Nutrition of Shigella: Growth of *Shigella flexneri* in a Simple Chemically Defined Medium. Arvid L. Erlandson, Jr. and William H. Mackey 253–257
Flocculation of Bacteria by Hydrophilic Colloids. Howard M. Hodge and S. Nicholas Metcalfe, Jr. 258–264
Nutritional Requirements for the Growth and Arthrospore Formation of *Coccidioides immitis*. E. P. Goldschmidt and G. W. Taylor 265–271
Isolation of Antibiotic-Resistant Lactobacilli. R. H. Ellis and W. B. Sarles 272–277
A Continuous Flow Apparatus for the Study of Mixed Cultures. Leonard Zubrzycki and Earle H. Spaulding 278–282

Biochemistry of the Actinomycetales. III. Cell Wall Composition and the Action of Lysozyme upon Cells and Cell Walls of the Actinomycetales. Arthur Sohler, Antonio H. Romano, and Walter J. Nickerson 283–290
Pyrophosphatase Activity of *Bacillus megaterium* Spore and Vegetative Cell Extracts. Hillel S. Levinson, James D. Sloan, Jr., and Mildred T. Hyatt 291–299
A Probit Method to Interpret Thermal Inactivation of Bacterial Spores. Albert L. Fernelius, Charles E. Wilkes, Ira A. DeArmon, Jr., and Ralph E. Lincoln 300–304
Deoxyribose-Phosphate and Acetoin Syntheses by *Bacillus cereus*. J. D. Howells and E. S. Lindstrom 305–309
Some Biological Properties of Bacteriophages S13 and ϕX-174. Stanley A. Zahler 310–315
Production of Staphylocoagulase in a Special Medium. Isabel L. Szeto and Paul Halick 316–319
Studies of Mono- and Polylysogenic *Corynebacterium diphtheriae*. Neal B. Groman, Muzza Eaton, and Zina K. Booher 320–325
Observations on the Growth of the Bacterium *Caryophanon latum*. O. B. Weeks and L. M. Kelley 326–330
Metabolism of Pentoses by Clostridia. I. Enzymes of Ribose Dissimilation in Extracts of *Clostridium perfringens*. Morris A. Cynkin and E. A. Delwiche 331–334
Metabolism of Pentoses by Clostridia. II. The Fermentation of C^{14}-Labeled Pentoses by *Clostridium perfringens*, *Clostridium beijerinckii*, and *Clostridium butylicum*. Morris A. Cynkin and Martin Gibbs 335–338
Characteristics of Coagulase Positive and Coagulase Negative Staphylococci in Serum-Soft Agar. Richard A. Finkelstein and S. Edward Sulkin 339–344
Mechanisms Involved in the Resistance of *Mycobacterium tuberculosis* to *para*-Aminosalicylic Acid. Loyd W. Hedgecock 345–350
Growth and Development of T Strain Pleuropneumonialike Organisms in Human Epidermoid Carcinoma Cells (HeLa). Maurice C. Shepard 351–355
Methane Fermentation of Formate by *Methanobacillus omelianskii*. Martin J. Pine 356–359
Studies on Immunity to Toxins of *Clostridium botulinum*. IV. Production and Purification of Type C Toxin for Conversion to Toxoid. Matteo A. Cardella, James T. Duff, Carl Gottfried, and Joseph S. Begel 360–365

Notes:

Comparison of Microorganisms for the Assay of Bound Biotin. Robert B. Ferguson and Herman C. Lichstein 366
Aryl Sulfatase Activity of Aerobic Actinomycetales. Lawrence G. Waye, William J. Juarez, and Eltha G. Nichols 367–368

No. 4, April 1958

Studies on the Morphology and Nucleic Acid Content of Protoplasts of *Bacillus megaterium*. P. C. Fitz-James 369–382
Streptomyces lavendulae and *Streptomyces venezuelae*. A. Sánchez-Marroquín 383–389
Metabolism of *Sarcina lutea*. I. Carbohydrate Oxidation and Terminal Respiration. E. A. Dawes and W. H. Holms 390–399
Slime as a Possible Factor in Cell Clumping in *Nocardia corallina*. J. B. Clark 400–402
Nitrogen Fixation by a Facultative Bacillus. Seiichi Hino and P. W. Wilson 403–408
Studies on the Nutrition and Physiology of *Pasteurella pestis*. II. A Defined Medium for the Growth of *Pasteurella pestis*. Kiyoshi Higuchi and Charles E. Carlin 409–413
Effect of Hexose Analogues on the Growth of *Escherichia coli*. Martin Schick, Bernard Landau and Donald P. Tschudy 414–416
Antagonism of Methionine in Aminosalicylate-Inhibition of *Mycobacterium tuberculosis*. Loyd W. Hedgecock 417–421
Rapid Method for Determining Carbohydrate Utilization by Brucellae. Abe Pital, Ruth E. Cooper, and Joshua M. Leise 422–425
Requirement for Potassium by Bacteriá. Gabriel Lester 426–428

Some Interrelationships of Amino Acids in the Nutrition of *Leuconostoc mesenteroides*. Thomas P. O'Barr, Hilda Levin and Howard Reynolds 429–435
Correlation of Environmental and Biological Changes Occurring in a Complex Medium During Growth and Sporulation of *Bacillus* Species. Norman G. Roth, David H. Lively, and S. Nicholas Metcalfe, Jr. 436–442
Photodynamic Inactivation of Bacteriophage and Its Inhibition. Nobuto Yamamoto 443–448
Inhibition of Keto Acid Oxidation by Plague Toxin. Samuel J. Ajl, J. Woebke, and James Rust, Jr. 449–452
Products of Glucose Metabolism by Homofermentative Streptococci under Anaerobic Conditions. T. B. Platt and E. M. Foster 453–459
Nutrition and Metabolism of Marine Bacteria. VII. Growth Response of a Marine Flavobacterium to Surface Active Agents and Nucleotides. Robert A. MacLeod, H. Hogenkamp, and E. Onofrey 460–466
Serological Study of the Mucinases from *Shigella flexneri*. Samuel B. Formal, Joseph P. Lowenthal, and Emma Galindo 467–470
Antimicrobial Action as a Basis for Measurement of Diethylstilbestrol. L. J. Hamka and W. R. Lockhart 471–473
Bacterial Oxidation of Nicotine. Formation of γ-Aminobutyric Acid. L. E. Casida, Jr. and Richard Rosenfield 474–479
The Structure of Photosynthetic Bacteria. A. E. Vatter and R. S. Wolfe 480–488
Effect of Actidione (Cycloheximide) on Yeast Fermentation. Margaret E. Greig, Robert A. Walk, and Anna J. Gibbons 489–491

Notes:

Dissimilation of C^{14}-Labeled Glucose by *Serratia marcescens*. Aaron E. Wasserman and William J. Hopkins 492–493
Pyruvate Oxidation by *Streptococcus mitis* and *Streptococcus faecalis*. William E. Clapper and Grace H. Meade 493–494

No. 5, May 1958

Avery Memorial 495
Studies on Newcastle Disease Virus by the Plaque Method. Raymond K. Bower 496–498
Differential Diagnosis of *Bacillus cereus*, *Bacillus anthracis*, and *Bacillus cereus* var. *mycoides*. Eric R. Brown, Max D. Moody, E. Lee Treece, and Chauncey W. Smith 499–509
Study of Spontaneous Gene Unstabilization in *Escherichia coli*. Stephen Zamenhof, Sheldon Greer, and Rosalie De Giovanni 510–513
Study of Survival of Unstable Strains of *Escherichia coli*. Stephen Zamenhof and Rosalie De Giovanni 514–516
Minimal Media for Quantitative Studies with *Bacillus subtilis*. Arnold L. Demain 517–522
Cellular Response to Deleterious Agents during the Course of Synchronous Growth of *Escherichia coli*. Tomomichi Yanagita, Yoichi Maruyama, and Itaru Takebe 523–529
Growth and Manometric Studies on Carbohydrate Utilization by *Shigella flexneri*. Arvid L. Erlandson, Jr., and William H. Mackey 530–534
Tellurite Reductase from *Mycobacterium avium*. Takeo Terai, Takeshi Kamahora, and Yuichi Yamamura 535–539
Metabolism of Phytopathogenic Bacteria. II. Metabolism of Carbohydrates by Cell-Free Extracts. H. Katznelson 540–543
Growth of *Rickettsia prowazeki* in Irradiated Monolayer Cultures of Chick Embryo Entodermal Cells. Emilio Weiss and Harry R. Dressler 544–552
Staining Bacterial Smears with Fluorescent Antibody. IV. Grouping Streptococci with Fluorescent Antibody. Max D. Moody, Evelyn Conner Ellis, and Elaine L. Updyke 553–560

Effect of Oleic Acid on the Response of *Lactobacillus fermenti* to Thiamin and its Moieties. Frank M. MaciasR 561–566
Quantitative Conversion of Cells and Protoplasts of *Proteus mirabilis* and *Escherichia coli* to the L-Form. Otto E. Landman, Robert A. Altenbern, and Herbert S. Ginoza 567–576
Effect of Halogens on the Chloramphenicol Fermentation. Charles G. Smith 577–583
Stimulation of Epithelioid Cell Response in Experimental Guinea Pig Tuberculosis. Norman Molomut 584–585
Quantitative Determination of the Carotenoids in Yeasts of the Genus *Rhodotorula*. W. J. Peterson, W. R. Evans, Eileen Lecce, T. A. Bell, and J. L. Etchells 586–591
Experiments with some Microorganisms which Utilize Ethane and Hydrogen. Martin Dworkin and J. W. Foster 592–603
Experimental Shigella Infections: Characteristics of a Fatal Infection Produced in Guinea Pigs. Samuel B. Formal, Gustave J. Dammin, E. H. LaBrec, and H. Schneider 604–610

Notes:

Production of Glutamic Acid by Streptomycetes. D. Perlman and E. O'Brien. 611
Utilization of Magnesium Ribonucleate by Four Bacterial Species. Solomon Singer 612
Use of Filter Paper Chromatograms in Reading and Recording the Results of the Wassermann Reaction and other Serological Tests. Yohei Ito 612–614

No. 6, JUNE 1958

Two New Serotypes of *Escherichia coli* Isolated in Japan. H. Hiroki, T. Tsurumizu, B. Nakamura, and M. Sakanoue 615–616
Bactericidal Action of Chloramphenicol on *Escherichia coli*. Sadao Miyamura 617–622
Some Properties of the Cytochrome Oxidase of *Penicillium chrysogenum*. Charles J. Sih, P. B. Hamilton, and S. G. Knight 623–628
Effect of Fixatives upon Distribution of Stainable Material in *Escherichia coli* as Shown by Hydrogen Chloride Method of Staining. H. L. Chance 629–632
Bacterial Fermentation of Creatinine. I. Isolation of N-Methyl-Hydantoin. Jekisiel Szulmajster 633–639
Studies of the Fine Structure of Microorganisms. I. A Study of Factors Influencing the "Explosion Phenomenon" in Ultrathin Sections of Bacteria. Tadayo Hashimoto and H. B. Naylor 640–646
Studies of the Fine Structure of Microorganisms. II. Electron Microscopic Studies on Sporulation of *Clostridium sporogenes*. Tadayo Hashimoto and H. B. Naylor 647–653
Study of Folic Acid Derivatives in *Neurospora crassa* and the Recognition of a Mutant Resistant to Aminopterin. Marian E. Swendseid and Joseph F. Nyc ... 654–659
Relationship Between Purines and Folic Acid-Vitamins in the Micrococcus, *Gaffkya homari*. S. Aaronson and E. Rodriguez 660–665
Nutritional Characteristics of a Butyrivibrio. James W. Gill and Kendall W. King 666–673
Metabolism of 2-Pyrrolidone and γ-Aminobutyric acid by *Pseudomonas aeruginosa*. Frederick F. Noe and Walter H. Nickerson 674–681
Indole Reactions in Bacteria. Henry D. Isenberg and Lila H. Sundheim 682–690
Effects of Ammonia, Methylamine, and Hydroxylamine on the Adaptive Assimilation of Nitrite and Nitrate by a Mycobacterium. William E. DeTurk and Frederick Bernheim 691–696
Mating Reaction in the Yeast *Hansenula wingei*. Preliminary Observations and Quantitation. Thomas D. Brock 697–701
Biochemical Changes Occurring During Growth of *Coccidioides immitis* in a Defined Medium. E. P. Goldschmidt, G. W. Taylor, and L. J. Demetroulakos ... 702–706

Factors Influencing Variola Virus Growth on the Chorioallantoic Membrane of Embryonated Eggs. Nicholas Hahon, Milton Ratner, and Edmund Kozikowski 707–712
Isolation and Characterization of *Methanobacterium ruminantium*, N. Sp. Paul H. Smith and R. E. Hungate 713–718
Alterations in the Blood Chemistry of Chicks Treated with the Endotoxin of *Salmonella pullorum*. Elmo S. Dooley, D. Frank Holtman, and Charles D. Jeffries 719–723
Index of Authors 725
Index of Date of Issue 727
Index of Subjects 729
Contents of Volume i

JOURNAL

OF

BACTERIOLOGY

VOLUME 76

BALTIMORE, MD.
1958

EDITORIAL BOARD

J. R. Porter, *Editor* (1961)
State University of Iowa
Iowa City, Iowa

Joel Warren (1958)
Virus Research Laboratories
Chas. Pfizer and Company
Terre Haute, Indiana

H. L. Chance (1958)
University of Oklahoma
Norman, Oklahoma

E. A. Delwiche (1958)
Cornell University
Ithaca, New York

Joshua Lederberg (1958)
University of Wisconsin
Madison, Wisconsin

Werner Braun (1959)
Rutgers University
New Brunswick, New Jersey

H. A. Barker (1959)
University of California
Berkeley, California

G. Bertani (1959)
University of Southern California
School of Medicine
Los Angeles, California

J. L. Etchells (1959)
U. S. Food Fermentation Laboratory
North Carolina State College
Raleigh, North Carolina

C. E. van Rooyen (1959)
Department of Bacteriology
Dalhousie University
Halifax, Nova Scotia

G. P. Youmans (1959)
Northwestern University Medical School
Chicago, Illinois

Hilary Koprowski (1960)
The Wistar Institute
Philadelphia 4, Pennsylvania

R. Y. Stanier (1960)
University of California
Berkeley, California

O. B. Wecks (1960)
University of Idaho
Moscow, Idaho

B. D. Davis (1961)
Harvard Medical School
Boston 15, Massachusetts

C. W. Emmons (1961)
National Institutes of Health
Bethesda 14, Maryland

C. D. Cox (1961)
University of South Dakota
School of Medicine
Vermillion, South Dakota

C. F. Robinow (1961)
Department of Bacteriology
University of Western Ontario
London, Canada

E. J. Ordal (1961)
University of Washington
Seattle, Washington

Richard Donovick (1961)
The Squibb Institute for Medical Research
New Brunswick, New Jersey

W. D. McElroy (1962)
Johns Hopkins University
Baltimore, Maryland

Morris F. Shaffer (1962)
Department of Microbiology
Tulane University Medical School
New Orleans, Louisiana

Willis A. Wood (1962)
Department of Dairy Science
University of Illinois
Urbana, Illinois

Louis DS. Smith (1962)
Department of Botany and Bacteriology
Montana State College
Bozeman, Montana

Ex officio

Harry Eagle, President of the Society (1958), National Institutes of Health, Bethesda, Maryland.
Philip R. Edwards, Vice President (1958), Communicable Disease Center, Chamblee, Georgia.
E. M. Foster, Secretary, University of Wisconsin, Madison, Wisconsin.
J. H. Bailey, Treasurer, Sterling-Winthrop Research Institute, Rensselaer, New York.

INDEX OF AUTHORS[1]

Adelberg, Edward A., 326, 328
Albrecht, Alberta M., 651
Aleem, M. I. H., 510
Alexander, M., 217, 510
Alire, M. L., 270
Andersen, Ariel A., 471
Anderson, Paul S., Jr., 272
Anderson, Ralph F., 131
Andrews, A. W., 185
Arnold, Margie, 131
Ayers, William A., 504, 515

Ball, Meridian Greene, 669
Barkulis, S. S., 109
Barreto, Albert, Jr., 131
Bayne, H. G., 136, 417
Beaman, Alfred J., 455
Berman, David T., 454
Bernlohr, Robert W., 233
Bhuyan, Bijoy K., 376, 393
Bialy, J. J., 207
Biberstein, Ernst L., 445
Bishop, Francis W., 116
Borzani, Walter, 251
Bouma, Cecelia, 15, 529
Bowman, B. U., Jr., 52
Bradley, D. E., 618
Bradley, S. G., 464
Britt, Eugene M., 281, 288
Brock, Thomas D., 334
Broquist, Harry P., 646, 651
Bryant, M. P., 15, 529
Burgess, A. R., 333

Cameron, H. S., 546
Cameron, J. A., 225
Carr, Leonard B., 119
Carter, Charles H., 152
Cheldelin, Vernon H., 207, 308
Christensen, B. E., 207
Chu, Hilda, 15
Clapper, William E., 48
Clifton, C. E., 658
Cohen, Georges N., 328
Cohen, Sidney, 117
Colling, Margaret, 422
Conti, S. F., 406
Costlow, Richard D., 317
Cowles, Philip B., 272

Danga, F., 239
Davisson, J. W., 495
Deering, R. A., 123
DeWitt, Charles W., 631
Dienes, Louis, 245
Donaldson, Paul, 223
Douglas, H. C., 163

Eisler, Daniel M., 41, 589, 597
Ekstedt, Richard D., 109
Engel, M. S., 217

Farkas, M. E., 333
Ferlin, H. J., 342
Field, Marvin F., 485, 491
Fitzgerald, R. J., 455
Floyd, Thomas M., 122
Forget, Adrien, 118
Foster, J. W., 167
Franklin, J. G., 618
Free, E., 442
Friedman, S. B., 185

Gaby, W. L., 442
Gary, N. D., 359
Georgi, Carl E., 337
Gerhardt, Philipp, 281, 288
Geronimus, L. H., 117
Gilmour, C. M., 207
Gilmour, Marion N., 294
Godinger, D., 160
Goodner, K., 662
Gourevitch, A., 453
Graf, L. H., 359
Gray, F. V., 335
Grein, A., 457

Halperen, Sidney, 223
Harris, Susanna, 142
Harris, T. N., 142
Hashimoto, Tadayo, 406
Hechter, Oscar, 365
Heckly, Robert J., 422, 427
Hedrick, L. R., 342
Higuchi, Kiyoshi, 120
Holtman, D. Frank, 225
Housewright, Riley D., 499
Howell, Arden, Jr., 330
Huang, H. T., 495
Hulcher, Frank H., 565, 571
Humphrey, Ronald M., 104
Hunt, G. A., 453
Hunter, Patricia A., 294
Hurwitz, C., 612
Hutchison III, Clyde A., 578
Hylin, J. W., 36

[1] All entries indexed to first page of article.

Ingraham, J. L., 75
Irwin, John, 29

Jann, Gregory J., 549
Jeffries, Charles D., 225
Johnson, Emmett J., 658
Johnson, Marvin J., 376, 385, 393, 400

Kawatomari, Toshio, 227
Kennedy, Peter C., 445
King, Kendall W., 565, 571
Klungsoyr, Sigrid, 207
Kooistra, J. A., Jr., 327
Korman, Ruth Z., 454
Krasner, Robert I., 349
Kubik, Gayle, 41, 589, 597
Kupferberg, L. L., 359
Kupferberg, L. Lee, 120

Landau, J. V., 612
Lark, Cynthia, 666
Lark, Karl G., 666
Larsh, Howard W., 557
Lecce, James G., 312
Lein, J., 453
Leise, Joshua M., 152
Leonard, C. Gomez, 499
Lester, Gabriel, 365
Lewis, R. F., 524
Lichstein, Herman C., 485, 491
Linscott, William D., 669
Linton, A. H., 94
Lockingen, Lloyd S., 104
Long, Sterling K., 332
Looney, Della, 63, 70
Lynn, Raymond J., 264

McGuire, C. David, 122
MacKintosh, M. Elizabeth, 455
Madoff, Sarabelle, 245
Maio, Joseph, J., 256
Martin, Hans H., 167
Martineau, Bernard, 118
Mattman, Lida H., 333
Meade, Grace H., 48
Melnykovych, George, 518
Meyer, Margaret E., 445, 546
Meyers, S. P., 457
Mika, Leonard A., 437
Militzer, Walter E., 337
Miller, Donna J., 368
Mohberg, Joyce, 385, 393
Morowitz, Harold J., 81, 578
Morse, M. L., 270
Moussa, Raouf S., 538
Mudd, Stuart, 640

Naylor, H. B., 406
Nelson, George E. N., 131
Newburgh, R. W., 308
Nigg, Clara, 422, 427

Ogburn, Clifton A., 142
Ogg, J. E., 185
Olitzki, A. L., 160

Payne, William J., 301
Pirsch, James B., 437
Pollok, Nicholas L., 437
Pramer, D., 524
Preston, Herbert, 41, 589, 597
Preston, William S., 155
Price, Zane H., 116

Reed, D. J., 207
Reiner, J. M., 612
Rhodes, Robert A., 131
Ridgway, George J., 163
Rittenberg, Marvin B., 669
Rizki, M. T. M., 607
Robinson, I. M., 529
Rodenberg, Sidney D., 84
Rogosa, M., 455
Rogosa, Morrison, 330
Rosenbaum, Manuel, 155
Rotman, Boris, 1

Sadoff, H. L., 203
Sall, Theodore, 640
Salle, Anthony J., 549
Scherp, Henry W., 355
Schneider, Louis E., 437
Seeley, Harry W., Jr., 29
Sellers, Walter, 327
Shekleton, Margaret C., 131
Shepard, Charles C., 557
Small, Nola, 15, 529
Smith, Harry L., 662
Smith, Paul F., 264
Snell, Esmond E., 518
Sobek, J. M., 658
Spoerl, Edward, 63, 70
Stern, Ivan, 207
Stiffey, Arthur V., 646
Stokes, J. L., 136, 417
Strange, Richard E., 192
Stuy, Johan H., 179, 668
Sulkin, S. Edward, 223
Surgalla, M. J., 185
Surgalla, Michael J., 368

Takagi, Atsuchi, 640
Tardrew, Philip L., 400
Tepper, B. S., 24
Thompson, Thomas L., 337
Thonard, John C., 355

Thorne, Curtis B., 192, 499
Treadwell, Perry E., 549
Tresner, H. D., 239

Vairo, Marina L. R., 251

Walsh, Gerald, 109
Wang, C. H., 207
Webster, George C., 233
Wessman, Garner E., 368
Williams, O. B., 332
Wilson, J. B., 24
Woese, Carl, 81
Woese, Carl R., 578
Wyss, Orville, 104

Young, Genevieve, 349

Zahler, Stanley A., 256
Zoha, S. M. S., 203

INDEX TO DATE OF ISSUE

Month	Date of Issue	Pages
July	7/28/58	1–122
August	8/19/58	123–226
September	9/23/58	227–336
October	10/28/58	337–456
November	11/21/58	457–564
December	12/23/58	565–682

INDEX OF SUBJECTS[1]

Acetate, inhibition of bacterial utilization of, by 6-ethyl-8-mercaptooctanoic acid, 646, 651

Acetylphosphate generation in *Escherichia coli*, inhibition of, by 6-ethyl-8-mercaptooctanoic acid, 651

Achromobacter nicotinophagum, n. sp., characteristics of, 36

— species, amino acid content of, 131

Acid producing colonies of staphylococci, medium for, 454

— production by bacteria, agar medium for measuring, 270

Actinomycetes, marine, characteristics of, 457

Aerobacter aerogenes, effect of deoxycorticosterone on growth of, 365

— —, electrophoretic analysis of extracts of, 84

— species, amino acid content of, 131

Aeromonas species, amino acid content of, 131

Aerosol sampler for viable particles, 471

Agar medium for measuring acid production by bacteria, 270

Agglutination techniques, use of, to study surface characteristics of Hansenula yeasts, 342

Agrobacterium radiobacter, effect of deoxycorticosterone on growth of, 365

— species; amino acid content of, 131

— *tumefaciens*, electrophoretic analysis of extracts of, 84

Airborne particles, new sampler for viable, 471

L-Alanine analogues in spore germination, action of, 578

D-Alanine, inhibition of spore germination by, 578

Alcaligenes faecalis, diagnosis of, 442

— —, nucleic acid synthesis in penicillin-treated, 666

— species, amino acid content of, 131

Aldolase, denaturation of bacterial, 337

Amino acids, content of, in microorganisms, 131

— —, effect of, on glucose fermentation by *Propionibacterium freudenreichii*, 491

— —, inhibition of bacterial synthesis of, by 6-ethyl-8-mercaptooctanoic acid, 646, 651

Anaerobe, production of spores by a putrefactive, 203

Anaerobic bacteria of bovine rumen, succinic acid-producing, 15

Andersen sampler for viable airborne particles, 471

Animal vibrios, biochemical characteristics of, 312

Antagonists of antimetabolites, excretion of, by bacterial mutants, 326

Antibiotic diffusion, evaluation of, by *Proteus* species, 333

— production of marine actinomycetes, 457

Antibody, fluorescent, identification of streptococci in bacterial mixtures with, 223

Antigen, protective, purification of, of *Bacillus anthracis*, 192

Antigenic specificity of streptococcal cell walls, 109

Antigens in steady-state cultures of the hemolytic streptococcus, 142

Antimetabolites, antagonists of, excretion of, by bacterial mutants, 326

Antiphage serum, effect of, on virulence of *Corynebacterium diphtheriae*, 272

Arginine decarboxylase, formation of, in *Escherichia coli*, 518

—, degradation of, by Micrococcaceae, 327

Ascospores of *Saccharomyces cerevisiae*, electron microscopy of, 406

Aspergillus niger, catabolism of glucose by, 207

— —, effect of deoxycorticosterone on growth of, 365

Azotobacter agilis, capsule of, 119

— —, effect of chloramphenicol on protein and nucleic acid metabolism in, 233

— —, incorporation of C^{14}-glycine into, 233

— —, oxidative assimilation by, 658

— species, amino content of, 131

Bacillus alvei, surface configuration of spores of, 618

— *anthracis*, lecithinase from, 317

— —, purification of protective antigen of, 192

— *brevis*, surface configuration of spores of, 618

— *calidolactis*, surface configuration of spores of, 618

— *cereus*, electrophoretic analysis of extracts of, 84

— —, nucleic acid synthesis in ultraviolet-irradiated, 668

— —, — acids of, 179

— —, removal of vegetative cells from spore preparations of, 332

— —, surface configuration of spores of, 618

— — var. *mycoides*, surface configuration of spores of, 618

— — — *thuringiensis*, surface configuration of spores of, 618

— *circulans*, surface configuration of spores of, 618

— *coagulans*, surface configuration of spores of, 618

[1] All entries indexed to first page of article.

— *firmis*, surface configuration of spores of, 618
— *laterosporus*, surface configuration of spores of, 618
— *lentus*, surface configuration of spores of, 618
— *licheniformis*, surface configuration of spores of, 618
— *macerans*, surface configuration of spores of, 618
— *megaterium*, dipicolinic acid biosynthesis in, 167
— —, effect of deoxycorticosterone on growth of, 365
— —, surface configuration of spores of, 618
— *pantothenticus*, surface configuration of spores of, 618
— *pasteurii*, surface configuration of spores of, 618
— *polymyxa*, surface configuration of spores of, 618
— *pulvifaciens*, surface configuration of spores of, 618
— *pumilus*, surface configuration of spores of, 618
— species, amino acid content of, 131
— *sphaericus*, surface configuration of spores of, 618
— *stearothermophilus*, removal of vegetative cells from spore preparations of, 332
— —, surface configuration of spores of, 618
— *subtilis*, action of D- and L-alanine analogues on germination of spores of, 578
— —, catabolism of glucose by, 207
— —, effect of deoxycorticosterone on growth of, 365
— —, electrophoretic analysis of extracts of, 84
— —, glutamyl polypeptide synthesis by, 499
— —, release of dipicolinic acid from spores of, 81
— —, surface configuration of spores of, 618
— — var. *aterrimus*, surface configuration of spores of, 618
— — — *niger*, surface configuration of spores of, 618
Bacterial permeability, studies on, in *Micrococcus lysodeikticus*, 281, 288
Bacteriophage synthesis and growth of *Escherichia coli*, relationships between vitamin B_{12} and methionine and, 104
—, T_2, host induced modification of, 256
Bacteriophages for mycobacteria, 52
Bacteroides ruminicola new species, characteristics of, 15
— — subsp. *brevis* n. subsp., 15
— — — *ruminicola* n. subsp., 15
Biochemical characteristics of *Vibrio fetus*, 312
Bovine rumen, new species and new genera of bacteria in, 15
Brucella abortus, fixation and distribution of $C^{14}O_2$ in, 24
— *neotomae*, metabolism of, 546
— *suis*, characterization of glucosidic polysaccharide produced by, 359
— —, immunological factors in combined infection with *Coxiella burnetii*, 437
— —, staining of, with fluorescent antiglobulin, 152
Butyric acid, synthesis of in rumen of sheep, 335

$C^{14}O_2$, assimilation of, in *Brucella abortus*, 24
—, fixation and distribution of, in *Brucella abortus*, 24
C^{14}-Glycine, incorporation of in *Azotobacter agilis*, 233
Calcium, effect of, on glutamyl polypeptide synthesis by *Bacillus subtilis*, 499
—, — —, — growth of *Pasteurella pestis*, 120
—, requirement of streptococcal hemolysin for, 29
Capsule of *Azotobacter agilis*, 119
Carbohydrate metabolism in yeast, effect of X-rays on, 70
Carbon dioxide requirements of propionibacteria, 485
Casein hydrolyzate, effect of, on glucose fermentation by *Propionibacterium freudenreichii*, 491
Cell permeability of yeast, effect of X-rays on, 70
Cellobiose phosphorylase in *Cellvibrio gilvus* n. sp., 571
—, phosphorylation of, by *Ruminococcus flavefaciens*, 515
—, production of, by *Cellvibrio gilvus* n. sp., 565, 571
Cellulolytic cocci from rumen contents, characteristics of, 529
Cellulomonas species, amino acid content of, 131
Cellulose, degradation of, by *Cellvibrio gilvus* n. sp., 565, 571
Cellvibrio gilvus n. sp., disaccharide preference of, 565, 571
— species, amino acid content of, 131
Cell walls of streptococci, antigenic specificity of, 109
— —, uptake of lysine by, of *Micrococcus lysodeikticus*, 281, 288
Cephalosporium salmosynnematum, sulfur metabolism by, 393
— —, synnematin production by, 376
Chloramphenicol, effect of, on protein and nucleic acid metabolism in *Azotobacter agilis*, 333
Cholate, sodium, requirements of pleuropneumonialike organisms for, 264
Cholesterol, requirements of pleuropneumonialike organisms for, 264
Chromobacterium species, amino acid content of, 131
— *violaceum*, electrophoretic analysis of extracts of, 84

Cillobacterium cellulosolvens n. sp., characteristics of, 529
Clostridium botulinum, germination of spores of, 549
— *butyricum*, electrophoretic analysis of extracts of, 84
— *chauvoei*, toxins from, 538
— *perfringens*, L-forms of, 227
— *septicum*, toxins from, 538
Cocci, cellulolytic, from rumen contents, characteristics of, 529
Collagenase, inhibition of, by human gingival microbiota, 355
Colonial morphology and virulence of *Pasteurella pestis*, 41
— variation of *Pasteurella haemolytica* from sheep, 445
Colony morphology of *Clostridium perfringens*, 227
Corynebacterium bovis, inhibition of, by 6-ethyl-8-mercaptooctanoic acid, 646, 651
— *diphtheriae*, effect of antiphage serum on virulence of, 272
— —, polyphosphate and synchronized cell division of, 640
— *pseudodiphtheriticum*, effect of deoxycorticosterone on growth of, 365
Coxiella burnetii, immunological factors in combined infection with *Brucella suis*, 437
Cultures, preservation of, by drying on beads, 453
Cunninghamella blakesleana, effect of deoxycorticosterone on growth of, 365
Curvularia lunata, effect of deoxycorticosterone on growth of, 365
Cysteine, denaturation of aldolase by, 337

Decarboxylase, arginine, formation of, in *Escherichia coli*, 518
Denaturation of bacterial aldolase, 337
Deoxycorticosterone, effect of, on growth of microorganisms, 365
Deoxyribonucleic acid, stimulation of streptococcal hemolysin by, 29
Dipicolinic acid, biosynthesis of, in *Bacillus megaterium*, 167
— —, release of, from spores of *Bacillus subtilis*, 81
Diplococcocus pneumoniae, L-forms from, 245
Disaccharide preference of *Cellvibrio gilvus* n. sp., 565, 571
Dissociation of *Pasteurella pestis*, 589, 597
Dwarf colony mutants of Salmonellae, 136

Electron micrograph of *Azotobacter agilis*, 119
— microscope grid holding device, 116
— — survey of spores of genus *Bacillus*, 618
— microscopy of ascospores of *Saccharomyces cerevisiae*, 406
Electrophoresis, study of bacterial extracts by, 84
Emericellopsis terricola var. *glabra*, sulfur metabolism, 383
— — — —, synnematin production by, 376
Enzymatic activity in the intact cell (*Escherichia coli*) regulation of, 1
Enzyme(s), β-galactosidase of *Escherichia coli*, 1
—, β-thiogalactosidase of *Escherichia coli*, 1
Erwinia carotovora, effect of deoxycorticosterone on growth of, 365
— species, amino acid content of, 131
Escherichia anindolica, lysine racemase in, 495
— *coli*, acetylphosphate generation in, inhibition of, 6-ethyl-8-mercaptooctanoic acid, 651
— —, agar medium for measuring acid production by, 270
— —, amino acid content of, 131
— — and phage synthesis, relationships between vitamin B_{12} and methionine and, 104
— —, catabolism of glucose by, 207
— —, effect of deoxycorticosterone on growth of, 365
— —, — — ultraviolet light on the division of, 123
— —, electrophoretic analysis of extracts of, 84
— —, formation of arginine decarboxylase in, 518
— —, β-galactosidase of, 1
— —, incorporation of *p*-fluorophenylalanine by mutant of, 328
— — infected with phage T2, protein and nucleic acid relationships in, 155
— —, penicillin-induced spheroplasts of, 612
— *freundii*, lysine racemase in, 495
6-Ethyl-8-mercaptooctanoic acid, inhibition of bacterial growth with, 646, 651

Filament formation in *Escherichia coli*, effect of ultraviolet light on, 123
Fixation of $C^{14}O_2$ in *Brucella abortus*, 24
Flavobacterium species, amino acid content of, 131
Fluorescent antibody, identification of streptococci in bacterial mixtures with, 223
— antiglobulin, staining bacteria with, 152
p-Fluorophenylalanine, incorporation of, by mutant of *Escherichia coli*, 328
Folic acid of medium and riboflavin metabolism of *Streptococcus faecalis*, 48

β-Galactosidase of *Escherichia coli*, 1
Galacturonate, utilization of, by a marine pseudomonad, 301
Gelatin-agar plate methods for detection of bacterial gelatinase, 662
Gelatinase, detection of bacterial, 662
Genetic analysis of *Streptomyces coelicolor*, 464
Genus, new, *Succinimonas*, 15

Germination of spores of *Clostridium botulinum*, 549
Gingival microbiota, inhibition of collagenase by, 355
Glucose catabolism by microorganisms using the radiorespirometric method, 207
— fermentation by *Propionibacterium freudenreichii*, 491
— oxidation in wheat smut fungus (*Tilletia caries*), 308
—, phosphorlyation of, by *Ruminococcus flavefaciens*, 515
—, stimulating effect of autoclaved, for propionibacteria, 485
—, toxic effect of, on virulent *Pasteurella pestis* 368
Glucosidic polysaccharide, characterization of, produced by *Brucella suis*, 359
Glutamyl polypeptide synthesis by *Bacillus subtilis*, 499
Grid holding device for electron microscope, 116
Growth-factor-dependent strains of Salmonellae, 417

Haemophilus aegypticus, influence of pentoses on O_2 uptake of, 160
— *influenzae*, influence of pentoses on O_2 uptake of, 160
Hamster, survival and dissemination of streptococci in, role of hyaluronidase in, 349
Hansenula anomala, surface characteristics of, 342
— *capsulata*, surface characteristics of, 342
— *ciferri*, surface characteristics of, 342
— *schneggii*, surface characteristics of, 342
— *silvicola*, surface characteristics of, 342
— *wingei*, cell surface component in mating reaction of, 334
HeLa cells, studies of *Histoplasma capsulatum* in, 557
Hemolysin, soluble, characterization of streptococcal, 29
Heterokaryons of *Streptomyces coelicolor*, 464
Histoplasma capsulatum, studies of, in HeLa cells, 557
Host resistance to infection, effect of gastric mucin on properdin and, 631
Hyaluronic acid, role of, in survival and dissemination of streptococci in the hamster, 349
Hyaluronidase, role of, in survival and dissemination of streptococci in the hamster, 349
Hydrogen sulfide production by streptomyces, 239
Hydrogenomonas species, amino acid content of, 131
6-Hydroxy-3-succinoylpyridine, formation of, from nicotine, by *Achromobacter nicotinophagum*, 36

Immunological factors in combined infection with *Brucella suis* and *Coxiella burnetii*, 437
Immunology of variants of *Pasteurella pestis*, 589, 597
Infection, properdin and host resistance to, effect of gastric mucin on, 631
Infections, studies on mixed, 437
Inositol, unbalanced growth of yeast due to deficiency of, 163

α-Keto acids, effect of, on modification of T2 phage, 256
α-Ketoglutaric acid, effect of, on modification of T2 phage, 256
Klebsiella pneumoniae, assay of streptomycin with, 94
Kloeckera apiculata, unbalanced growth of, due to inositol deficiency, 163

L-forms from pneumococci, 245
— of *Clostridium perfringens*, 227
Lactobacillus casei, electrophoretic analysis of extracts of, 84
Lecithin, requirements of pleuropneumonialike organisms for, 264
Lecithinase from *Bacillus anthracis*, 317
Lecithovitellin reaction, *Bacillus anthracis* and, 317
Leptospirae, separation of, from contaminating microorganisms, 669
Leptothrix, mouth organisms resembling, 294
Leptotrichia buccalis, isolation of, 330
—, mouth organsims resembling, 294
Leuconostoc mesenteroides, electrophoretic analysis of extracts of, 84
Lipid requirements of pleuropneumonialike organisms, 264
Lysine, content of, in microorganisms, 131
— pool in *Micrococcus lysodeikticus*, 281, 288
— racemase in bacteria, 495
—, uptake of, by intact cells, protoplasts and cell walls of *Micrococcus lysodeikticus*, 281, 288

Manganese, effect of, on glutamyl polypeptide synthesis by *Bacillus subtilis*, 499
—, requirement of streptococcal hemolysin for, 29
Marine actinomycetes, antibiotic production by, 457
— —, characteristics of, 457
— pseudomonad, utilization of uronic acids by, 301
Mating reaction of *Hansenula wingei*, cell surface component in, 334
Medium for acid producing colonies of staphylococci, 454
— — isolation of *Veillonella* species, 455

Metabolism of *Brucella neotomae*, 546
Metabolites of *Serratia marcescens*, diffusion of, 607
Metallic ions, effect of, on glutamyl polypeptide synthesis by *Bacillus subtilis*, 499
Methionine, content of, in microorganisms, 131
—, effect of, on growth of *Escherichia coli* and phage synthesis, 104
Methylene blue, adsorption of, by dead yeast cells, 251
Micrococcaceae, degradation of arginine by, 327
Micrococcus lysodeikticus, electrophoretic analysis of extracts of, 84
— —, pooling and uptake of lysine by, 281, 288
— species, amino acid content of, 131
Morphology, colony, of *Clostridium perfringens*, 227
Mouth organisms resembling leptotrichia and leptothrix, isolation of, 294
Mucin, gastric, effect of, on properdin and host resistance to infection, 631
Mutants, bacterial, excretion of antagonists of antimetabolites by, 326
—, dwarf colony, of Salmonellae, 136
— of *Penicillium chrysogenum*, sulfate utilization by, 400
Mycobacterial phage-host systems, studies on, 52
Mycobacterium ranae, effect of deoxycorticosterone on growth of, 365
— —, phage for, 52
— *smegmatis*, electrophoretic analysis of extracts of, 84
— species, amino acid content of, 131
— *tuberculosis*, phage for, 52
Mycoplana species, amino acid content of, 131

Neisseria catarrhalis, effect of deoxycorticosterone on growth of, 365
— —, electrophoretic analysis of extracts of, 84
Neurospora crassa, effect of deoxycorticosterone on growth of, 365
Nicotine, microbial degradation of, 36
Nitrification by *Nitrobacter agilis*, 510
Nitrobacter agilis, nitrification by cell-free, 510
Nitrosomonas europaea, growth and metabolism of, 217
—, isolation of pure culture of, 524
Nocardia species, amino acid content of, 131
Nucleic acid and protein relationships in *Escherichia coli* infected with phage T2, 155
— — metabolism in *Azotobacter agilis*, effect of chloramphenicol on, 233
— — synthesis in penicillin-treated *Alcaligenes faecalis*, 666
— — — — ultraviolet-irradiated *Bacillus cereus*, 668
— acids of *Bacillus cereus*, 179
Nutrition of Nitrosomonas, 524
— — *Ruminococcus flavefaciens*, 504, 515
— — Salmonellae, 417

Oral filamentous organisms, isolation of, 294
Oxalacetic acid, effect of, on modification of T2 phage, 256
Oxidative assimilation by *Azobacter agilis*, 658

Pasteurella haemolytica, colonial variation of, from sheep, 445
— *pestis*, colonial morphology and virulence of, 41
— —, dissociation of, 589, 597
— —, effect of calcium on growth of, 120
— —, loss of virulence in, 185
— —, staining of, with fluorescent antiglobulin, 152
— —, toxic effect of glucose on virulence of, 368
— *tularensis*, staining of, with fluorescent antiglobulin, 152
Penetration mechanism of enzymes in *Escherichia coli*, 1
Penicillin, binding of, by *Staphylococcus aureus*, 385
— -induced spheroplasts of *Escherichia coli*, 612
Penicillinase, staphylococcal, inducibility of, 117
Penicillium chrysogenum, catabolism of glucose by, 207
— —, sulfate utilization by mutants of, 400
— *digitatum*, catabolism of glucose by, 207
— *lilacinum*, effect of deoxycorticosterone on growth of, 365
— *puberulum*, effect of deoxycorticosterone on growth of, 365
Pentoses, influence of, on O_2 uptake of *Haemophilus* species, 160
Permeability, studies on, in *Micrococcus lysodeikticus*, 281, 288
Phage, antiserum for, effect of, on virulence of *Corynebacterium diphtheriae*, 272
— -host systems, mycobacterial, studies on, 52
— infection of *Escherichia coli*, nucleic acid and protein relationships in, 155
—, T2, host induced modification of, 256
Phages for mycobacteria, 52
Phagocytosis of *Histoplasma capsulatum* in HeLa tissue cultures, 557
Phosphagen, role of, in *Corynebacterium diphtheriae*, 640
Phosphate, requirement of streptococcal hemolysin for, 29
Phosphorous metabolism in yeast, effect of X-rays on, 63
Phosphorylase, cellobiose, in *Cellvibrio gilvus* n. sp., 571

Phosphorylation of cellobiose and glucose by *Ruminococcus flavefaciens*, 515
Physiology of *Ruminococcus flavefaciens*, 504, 515
Pigment of *Pseudomonas aeruginosa*, detection of, 118
Pleuropneumonialike organisms, lipid requirements of, 264
Pneumococci, L-forms from, 245
Polyphosphate and synchronized cell division of *Corynebacterium diphtheriae*, 640
Polysaccharide, glucosidic, characterization of, produced by *Brucella suis*, 359
Potassium, requirement of streptococcal hemolysin for, 29
Preservation of cultures by drying on beads, 453
Properdin and host resistance to infection, effect of gastric mucin on, 631
Propionibacteria, stimulating effect of autoclaved glucose for, 485
Propionibacterium freudenreichii, stimulating effect on autoclaved glucose for, 485
— *pentosaceum*, stimulating effect of autoclaved glucose for, 485
— *petersonii*, stimulating effect of autoclaved glucose for, 485
Protein and nucleic acid relationships in *Escherichia coli* infected with phage T2, 155
— metabolism in *Azotobacter agilis*, effect of chloramphenicol on, 233
Proteinases in a streptococcus grown in a steady state, 142
Proteus americanus, lysine racemase in, 495
— *ammoniae*, lysine racemase in, 495
— *inconstans*, lysine racemase in, 495
— *mirabilis*, lysine racemase in, 495
— *paraamericanus*, lysine racemase in, 495
— *rettgeri*, lysine racemase in, 495
— species, amino acid content of, 131
— —, evaluation of antibiotic diffusion in, 333
— *sphinglidis*, lysine racemase in, 495
— *vulgaris*, effect of deoxycorticosterone on growth of, 365
— —, electrophoretic analysis of extracts of, 84
— —, lysine racemase in, 495
Protoplasts, uptake of lysine by, of *Micrococcus lysodeikticus*, 281, 288
Pseudomonad, marine, utilization of uronic acids by, 301
Pseudomonads, psychrophilic, growth of, 75
Pseudomonas aeruginosa, detection of pigment of, 118
— —, diagnosis of, 442
— —, effect of deoxycorticosterone on growth of, 365
— —, electrophoretic analysis of extracts of, 84
— *fluorescens*, effect of deoxycorticosterone on growth of, 365
— *pseudomallei*, production and characterization of toxins of, 422, 427
— *reptilivora*, catabolism of glucose by, 207
— *saccharophila*, catabolism of glucose by, 207
— species, amino acid content of, 131
Psychrophilic bacteria, growth of, 75
Pullorum disease, glycogen reduction in chick liver during, 225
Putrefactive anaerobe, production of spores by, 203
Pyruvic acid, effect of, on modification of T2 phage, 256
— oxidase in *Streptococcus faecalis*, inhibition of by 6-ethyl-8-mercaptooctanoic acid, 651

Racemase, lysine, in bacteria, 495
Radiorespirometric method, use of to study glucose catabolism by microorganisms, 207
Rhizobium species, amino acid content of, 131
Rhodospirillum species, amino acid content of, 131
Riboflavin metabolism of *Streptococcus faecalis*, folic acid of medium and, 48
Rumen bacteria of sheep, synthesis of butyric acid in, 335
—, bovine, new species and new genera of bacteria in, 15
Ruminococcus flavefaciens, nutrition and physiology of, 504, 515

Sabouraud maltose agar for detection of pigment of *Pseudomonas aeruginosa*, 118
Saccharomyces carlsbergensis, unbalanced growth of due to inositol deficiency, 163
— *cerevisiae*, adsorption of methylene blue by, 251
— —, catabolism of glucose by, 207
— —, effect of deoxycorticosterone on growth of, 365
— —, — — X-rays on carbohydrate metabolism in, 70
— —, electron microscopy of ascospores of, 406
— —, phosphorus metabolism in, 63
Salmonella abortusovis, growth factor requirements of, 417
— *anatum*, dwarf colony mutants of, 136
— *bareilly*, dwarf colony mutants of, 136
— *enteritidis*, effect of deoxycorticosterone on growth of, 365
— *fulica*, growth factor requirements of, 417
— *gallinarum*, growth factor requirements of, 417
— *meleagridis*, dwarf colony mutants of, 136
— *oranienburg*, dwarf colony mutants of, 136
— *paratyphi* A, growth factor requirements of, 417
— *pullorum* disease in chicks, glycogen reduction in liver during, 225
— —, growth factor requirements of, 417
— *typhisuis*, growth factor requirements of, 417
Sarcina flava, electrophoretic analysis of extracts of, 84

— *lutea*, effect of deoxycorticosterone on growth of, 365
— —, electrophoretic analysis of extracts of, 84
— species, amino acid content of, 131
Serological specificity in *Shigella flexneri*, 122
Serratia marcescens, diffusion of metabolites of, 607
— —, effect of deoxycorticosterone on growth of, 365
— —, electrophoretic analysis of extracts of, 84
— species, amino acid content of, 131
Serum, antiphage, effect of, on virulence of *Corynebacterium diphtheriae*, 272
—, effect of, on phagocytosis of *Histoplasma capsulatum* in tissue cultures, 557
Sheep, colonial variation of *Pasteurella haemolytica* from, 445
Shigella flexneri, serological specificity in, 122
— *sonnei*, effect of deoxycorticosterone on growth of, 365
Smut fungus of wheat, glucose oxidation in, 308
Species, new, *Achromobacter nicotinophagum*, 36
—, —, *Bacteroides ruminicola*, 15
Spheroplasts of *Escherichia coli*, study of penicillin-induced, 612
Spore germination, action of D- and L-alanine analogues in, 578
— preparations, removal of vegetative cells from, 332
Spores, germination of *Clostridium botulinum*, 549
— of *Bacillus subtilis*, release of dipicolinic acid from, 81
—, production of, by a putrefactive anaerobe, 203
—, surface configuration of, of genus *Bacillus*, 618
Staining bacteria with fluorescent antiglobulin, 152
Staphylococcal penicillinase, inducibility of, 117
Staphylococci, acid producing colonies of, medium for, 454
Staphylococcus aureus, agar medium for measuring acid production by, 270
— —, amino acid content of, 131
— —, binding of penicillin by, 385
— —, — — synnematin by, 385
— —, degradation of arginine by, 327
— —, electrophoretic analysis of extracts of, 84
— —, inducibility of penicillinase in, 117
Steady-state cultures of a streptococcus, proteinase of, 142
Sterol, requirements of pleuropneumonialike organisms for, 264
Streptococcal cell walls, antigenic specificity of, 109
— hemolysin, characterization of soluble, 29
Streptococci in bacterial mixtures, identification of, with fluorescent antibody, 223
—, role of hyaluronidase in survival and dissemination of, 349
Streptococcus faecalis, electrophoretic analysis of extracts of, 84
— —, folic acid of medium and riboflavin metabolism of, 48
— —, inhibition of, by 6-ethyl-8-mercaptooctanoic acid, 646, 651
— —, — — pyruvic oxidase in, by 6-ethyl-8-mercaptooctanoic acid, 651
—, hemolytic, antigens in steady-state cultures of, 142
— *zymogenes*, characterization of soluble hemolysin from, 29
Streptomyces bikiniensis, production of H_2S by, 239
— *coelicolor*, genetic analysis of, 464
— —, heterokaryons of, 464
— *griseus*, catabolism of glucose by, 207
— *lavendulae*, production of H_2S by, 239
— species, amino acid content of, 131
— —, production of H_2S by, 239
Streptomycin, assay of, with *Klebsiella pneumoniae*, 94
Succinic acid-producing anaerobic bacteria of bovine rumen, 15
Succinimonas amylolytica, new species, characteristics of, 15
Sulfate, requirement of streptococcal hemolysin for, 29
— utilization by mutants of *Penicillium chrysogenum*, 400
Sulfhydryl compounds, denaturation of aldolase by, 337
Sulfur metabolism by *Cephalosporium salmosynnematum*, 393
— — — *Emericellopsis terricola* var. *glabra*, 393
Surface characteristics of Hansenula yeasts, 342
— configuration of spores of genus *Bacillus*, 618
Synchronized cell division of *Corynebacterium diphtheriae*, polyphosphate and, 640
Synnematin, binding of, by *Staphylococcus aureus*, 385
—, chemically defined medium for production of, 376

T2 bacteriophage, host induced modification of, 256
Thioctic acid analogues, microbiological studies with, 646, 651
β-Thiogalactosidase in *Escherichia coli*, 1
Tilletia caries, glucose oxidation in, 308
Tissue cultures, HeLa cell, studies of *Histoplasma capsulatum* in, 557
Torula cremoris, inhibition of, by 6-ethyl-8-mercaptooctanoic acid, 646, 651
Torulopsis utilis, effect of deoxycorticosterone on growth of, 365
Toxic effect of glucose on virulent *Pasteurella pestis*, 368

Toxicity of *Corynbacterium diphtheriae*, effect of antiphage serum on, 272
Toxins from *Clostridium chauvoei*, 538
— — — *septicum*, 538
— of *Pseudomonas pseudomallei*, production and characterization of, 422, 427
Tryptophan, content of, in microorganisms, 131

Ultrathin sectibns of ascospores of *Saccharomyces cerevisiae*, 406
Ultraviolet-irradiated *Bacillus cereus*, nucleic acid synthesis in, 668
Ultraviolet light, effect of, on the division of *Escherichia coli*, 123
Uronic acids, bacterial utilization of, 301

Variants of *Pasteurella pestis*, immunology of, 589, 597
Veillonella species, medium for isolation of, 455
Vibrio comma, staining of, with fluorescent antiglobulin, 152
— *fetus*, biochemical characteristics of, 312
— species, amino acid content of, 131
Virulence and colonial morphology of *Pasteurella pestis*, 41
—, loss of, in *Pasteurella pestis*, 185
Virulence of *Corynebacterium diphtheriae*, effect of antiphage serum on, 272
Vitamin B_{12}, effect of, on growth of *Escherichia coli* and phage synthesis, 104

Wheat smut fungus, glucose oxidation in, 308

Xanthomonas species, amino acid content of, 131
X-rays, effect of, on carbohydrate metabolism in yeast, 70
—, —, — cell permeability of yeast, 70
—, — —, — phosphorus metabolism in yeast, 63

Yeast, phosphorus metabolism in, 63
—, unbalanced growth of, due to inositol deficiency, 163
Yeasts, adsorption of methylene blue by, 251

CONTENTS

No. 1, JULY 1958

Regulation of Enzymatic Activity in the Intact Cell: The β-D-Galactosidase of *Escherichia coli*. Boris Rotman 1–14

Bacteroides ruminicola n. sp. and the New Genus and Species *Succinimonas amylolytica*. Species of Succinic Acid-Producing Anaerobic Bacteria of the Bovine Rumen. M. P. Bryant, Nola Small, Cecelia Bouma, and Hilda Chu 15–23

Fixation and Distribution of $C^{14}O_2$ in *Brucella abortus*. B. S. Tepper and J. B. Wilson 24–28

Titration and Partial Characterization of a Soluble Hemolysin of a Group D Streptococcus. John Irwin and Harry W. Seeley, Jr. 29–35

Microbial Degradation of Nicotine. I. Morphology and Physiology of *Achromobacter nicotinophagum* n. sp. J. W. Hylin 36–40

Colonial Morphology and Virulence of *Pasteurella pestis*. Daniel M. Eisler, Gayle Kubik, and Herbert Preston 41–47

Relation of Folic Acid Concentration of Medium to Riboflavin Metabolism of *Streptococcus faecalis*. William E. Clapper and Grace H. Meade 48–51

Quantitative Studies on Some Mycobacterial Phage-Host Systems. B. U. Bowman, Jr. 52–62

Phosphorus Metabolism in Yeast Accompanying an Inhibition of Cell Division by X-Rays. Edward Spoerl and Della Looney 63–69

Carbohydrate Metabolism in Yeast Accompanying an Inhibition of Cell Division by X-Rays. Edward Spoerl and Della Looney 70–74

Growth of Psychrophilic Bacteria. J. L. Ingraham 75–80

Kinetics of the Release of Dipicolinic Acid from Spores of *Bacillus subtilis*. Carl Woese and Harold J. Morowitz 81–83

Comparative Study of Bacterial Extracts by Analytical Electrophoresis. Sidney D. Rodenberg 84–93

Influence of Inoculum Size on Antibiotic Assays by the Agar Diffusion Technique with *Klebsiella pneumoniae* and Streptomycin. A. H. Linton 94–103

Interrelationships among Vitamin B_{12}, and Methionine and Its Analogues, in Growth of *Escherichia coli* and in Bacteriophage Synthesis. Lloyd S. Lockingen, Ronald M. Humphrey, and Orville Wyss 104–108

Studies of Streptococcal Cell Walls. II. Type-Specific Antigenicity in Rabbits. S. S. Barkulis, Gerald Walsh, and Richard D. Ekstedt 109–115

NOTES:

Electron Microscope Grid Holding Device for the Mounting of Suspension Droplets. Zane H. Price and Francis W. Bishop 116–117

Further Evidence for Inducibility of Staphylococcal Penicillinase. L. H. Geronimus and Sidney Cohen 117–118

Routine Use of Sabouraud Maltose Agar for the Rapid Detection of the Bluish-Green Pigment of *Pseudomonas aeruginosa*. Bernard Martineau and Adrien Forget 118–119

Observations on the Capsule of *Azotobacter agilis*. Leonard B. Carr 119–120

Role of Calcium Ions in the Stimulation of Growth of Virulent Strains of *Pasteurella pestis*. L. Lee Kupferberg and Kiyoshi Higuchi 120–121

In vivo Change of Serological Specificity in *Shigella flexneri*. C. David McGuire and Thomas M. Floyd 122

No. 2, AUGUST 1958

Studies on Division Inhibition and Filament Formation of *Escherichia coli* by ultraviolet light. R. A. Deering 123–130

Lysine, Methionine and Tryptophan Content of Microorganisms. I. Bacteria. Ralph F. Anderson, Robert A. Rhodes, George E. N. Nelson, Margaret C. Shekleton, Albert Barreto, Jr., and Margie Arnold 131–135

Dwarf Colony Mutants of Salmonellae. J. L. Stokes and H. G. Bayne 136–141
Extracellular Antigens in Steady-State Cultures of the Hemolytic Streptococcus: Production of Proteinase at Low pH. Clifton A. Ogburn, T. N. Harris, and Susanna Harris 142–151
Specific Staining of Various Bacteria with a Single Fluorescent Antiglobulin. Charles H. Carter and Joshua M. Leise 152–154
Protein and Nucleic Acid Relationships in *Escherichia coli* Infected with Phage T2. Manuel Rosenbaum and William S. Preston 155–159
Influence of Pentoses on the Oxygen Uptake of Haemophilus Strains. A. L. Olitzki and D. Godinger 160–162
Unbalanced Growth of Yeast Due to Inositol Deficiency. George J. Ridgway and H. C. Douglas 163–166
Biosynthesis of Dipicolinic Acid in *Bacillus megaterium*. Hans H. Martin and J. W. Foster 167–178
The Nucleic Acids of *Bacillus cereus*. Johan H. Stuy 179–184
Factors Influencing the Loss of Virulence in *Pasteurella pestis*. J. E. Ogg, S. B. Friedman, A. W. Andrews, and M. J. Surgalla 185–191
Further Purification Studies on the Protective Antigen of *Bacillus anthracis* Produced *in vitro*. Richard E. Strange and Curtis B. Thorne 192–202
Production of Spores by a Putrefactive Anaerobe. S.M.S. Zoha and H. L. Sadoff 203–206
Comparative Study of Glucose Catabolism by the Radiorespirometric Method. C. H. Wang, Ivan Stern, C. M. Gilmour, Sigrid Klungsoyr, D. J. Reed, J. J. Bialy, B. E. Christensen, and Vernon H. Cheldelin 207–216
Growth and Autotrophic Metabolism of *Nitrosomonas europaea*. M. S. Engel and M. Alexander 217–222

NOTES:

Identification of Streptococci in Bacterial Mixtures and Clinical Specimens with Fluorescent Antibody. Sidney Halperen, Paul Donaldson, and S. Edward Sulkin 223–224
Glycogen Reduction in Chick Liver During Pullorum Disease. J. A. Cameron, D. Frank Holtman, and Charles D. Jeffries 225

No. 3, SEPTEMBER 1958

Studies of the L-Forms of *Clostridium perfringens*. I. Relationship of Colony Morphology and Reversibility. Toshio Kawatomari 227–232
Effect of Chloramphenicol on Protein and Nucleic Acid Metabolism in *Azotobacter agilis*. Robert W. Bernlohr and George C. Webster 233–238
Hydrogen Sulfide Production by Streptomyces as a Criterion for Species Differentiation. H. D. Tresner and F. Danga 239–244
L Forms from Pneumococci. Sarabelle Madoff and Louis Dienes 245–250
Quantitative Adsorption of Methylene Blue by Dead Yeast Cells. Walter Borzani and Marina L. R. Vairo 251–255
Observations on the Host-Induced Modification of T2 Bacteriophage with Special Reference to the Effects of α-Keto Acids. Joseph J. Maio and Stanley A. Zahler 256–263
Lipid Requirements for the Growth of Pleuropneumonialike Organisms. Paul F. Smith and Raymond J. Lynn 264–269
An Agar Medium Indicating Acid Production. M. L. Morse and M. L. Alire 270–271
Effect of Antiphage Serum on the Virulence of *Corynebacterium diphtheriae*. Paul S. Anderson, Jr., and Philip B. Cowles 272–280
Bacterial Permeability. Lysine Pooling by Intact Cells and Protoplasts of *Micrococcus lysodeikticus*. Eugene M. Britt and Philipp Gerhardt 281–287
Bacterial Permeability. Total Uptake of Lysine by Intact Cells, Protoplasts, and Cell walls of *Micrococcus lysodeikticus*. Eugene M. Britt and Philipp Gerhardt 288–293
Isolation of an Oral Filamentous Microorganism. Marion N. Gilmour and Patricia A. Hunter 294–300

Studies on Bacterial Utilization of Uronic Acids. III. Induction of Oxidative Enzymes in a Marine Isolate. William J. Payne 301–307
Glucose Oxidation in Mycelia and Spores of the Wheat Smut Fungus *Tilletia caries*. R. W. Newburgh and Vernon H. Cheldelin 308–311
Some Biochemical Characteristics of *Vibrio fetus* and Other Related Vibrios Isolated from Animals. James G. Leece 312–316
Lecithinase from *Bacillus anthracis*. Richard D. Costlow 317–325

NOTES:

Selection of Bacterial Mutants which Excrete Antagonists of Antimetabolites. Edward A. Adelberg 326
Degradation of Arginine by the *Micrococcaceae*. Walter Sellers and J. A. Kooistra, Jr. 327–328
Kinetics of Incorporation of *p*-Fluorophenylalanine by a Mutant of *Escherichia coli* Resistant to this Analogue. Georges N. Cohen and Edward A. Adelberg 328–330
Isolation of *Leptotrichia buccalis*. Arden Howell, Jr., and Morrison Rogosa 330–331
Method for Removal of Vegetative Cells from Bacterial Spore Preparations. Sterling K. Long and O. B. Williams 332
Evaluation of Antibiotic Diffusion in L Variant Production by *Proteus* Species. Lida H. Mattman, A. R. Burgess, and M. E. Farkas 333
Protein as a Specific Cell Surface Component in the Mating Reaction of *Hansenula wingei*. Thomas D. Brock 334–335
Bacterial Synthesis of Butyric Acid in the Rumen of the Sheep. F. V. Gray 335–336
Erratum 336
Instructions to Authors 3-4

No. 4, October 1958

Partial Denaturation of a Bacterial Aldolase without Loss of Activity. Thomas L. Thompson, Walter E. Militzer, and Carl E. Georgi 337–341
Study of Surface Characteristics of Hansenula Yeasts by Agglutination Techniques: Use of Methylene Blue Acid and Metallic Ions. H. J. Ferlin and L. R. Hedrick 342–348
Role of Hyaluronidase and the Hyaluronic Acid Capsule in the Survival and Dissemination of Group A Streptococci in the Hamster Cheek Pouch. Robert I. Krasner and Genevieve Young 349–354
Inhibition of a Collagenase by the Human Gingival Microbiota. John C. Thonard and Henry W. Scherp 355–358
Characterization of Intracellular, Glucosidic Polysaccharide Produced by *Brucella suis*. N. D. Gary, L. L. Kupferberg, and L. H. Graf 359–364
Effect of Deoxycorticosterone on the Growth of Microorganisms. Gabriel Lester and Oscar Hechter 365–367
Toxic Effect of Glucose on Virulent *Pasteurella pestis* in Chemically Defined Media. Garner E. Wessman, Donna J. Miller, and Michael J. Surgalla 368–375
Chemically Defined Media for Synnematin Production. Bijoy K. Bhuyan and Marvin J. Johnson 376–384
Comparative Study of the Binding of Synnematin and Penicillin by Bacterial Cells. Joyce Mohberg and Marvin J. Johnson 385–392
Sulfur Metabolism of Synnematin-Producing Molds. Bijoy K. Bhuyan, Joyce Mohberg, and Marvin J. Johnson 393–399
Sulfate Utilization by Penicillin-Producing Mutants of *Penicillin chrysogenum*. Philip L. Tardrew and Marvin J. Johnson 400–405
Fine Structure of Microorganisms. III. Electron Microscopy of Resting and Germinating Ascospores of *Saccharomyces cerevisiae*. Tadayo Hashimoto, S. F. Conti, and H. B. Naylor 406–416
Growth-Factor-Dependent Strains of Salmonellae. J. L. Stokes and H. G. Bayne 417–421
Toxins of *Pseudomonas pseudomallei*. I. Production *in vitro*. Margaret Colling, Clara Nigg, and Robert J. Heckly 422–426

Toxins of *Pseudomonas pseudomallei*. II. Characterization. Robert J. Heckly and Clara Nigg 427–436
Studies on Mixed Infections. III. Influence of Immunological Factors in Combined *Brucella suis* and *Coxiella burnetii* Infection. Leonard A. Mika, Nicholas L. Pollok, Louis E. Schneider, and James B. Pirsch 437–441
Differential Diagnosis of Pseudomonas-Like Microorganisms in the Clinical Laboratory. W. L. Gaby and E. Free 442–444
Colonial Variation of *Pasteurella haemolytica* isolated from Sheep. Ernst L. Biberstein, Margaret E. Meyer, and Peter C. Kennedy 445–452

NOTES:

Preservation of Cultures by Drying on Porcelain Beads. G. A. Hunt, A. Gourevitch, and J. Lein 453–454
Medium for the Differentiation of Acid Producing Colonies of Staphylococci. Ruth Z. Korman and David T. Berman 454–455
Improved Medium for Selective Isolation of Veillonella. M. Rogosa, R. J. Fitzgerald, M. Elizabeth MacKintosh, and Alfred J. Beaman 455–456

No. 5, November 1958

Growth Characteristics and Antibiotic Production of Actinomycetes Isolated from Littoral Sediments and Materials Suspended in Sea Water. A. Grein and S. P. Meyers 457–463
Genetic Analysis of Segregants from Heterokaryons of *Streptomyces coelicolor*. S. G. Bradley 464–470
New Sampler for the Collection, Sizing, and Enumeration of Viable Airborne Particles. Ariel A. Andersen 471–484
Growth Stimulating Effect of Autoclaved Glucose Media and Its Relationship to the CO_2 Requirement of Propionibacteria. Marvin F. Field and Herman C. Lichstein 485–490
Influence of Casein Hydrolyzates and Amino Acids on Glucose Fermentation by *Propionibacterium freudenreichii*. Marvin F. Field and Herman C. Lichstein 491–494
Distribution of Lysine Racemase in Bacteria. H. T. Huang and J. W. Davisson 495–498
Effects of Some Metallic Ions on Glutamyl Polypeptide Synthesis by *Bacillus subtilis*. C. Gomez Leonard, Riley D. Housewright, and Curtis B. Thorne 499–503
Nutrition and Physiology of *Ruminococcus flavefaciens*. William A. Ayers 504–509
Cell Free Nitrification by Nitrobacter. M. I. H. Aleem and M. Alexander 510–514
Phosphorylation of Cellobiose and Glucose by *Ruminococcus flavefaciens*. William A. Ayers 515–517
Nutritional Requirements for the Formation of Arginine Decarboxylase in *Escherichia coli*. George Melnykovych and Esmond E. Snell 518–523
Isolation of Nitrosomonas in Pure Culture. R. F. Lewis and D. Pramer 524–528
Characteristics of Ruminal Anaerobic Cellulolytic Cocci and *Cillobacterium cellulosolvens* N. Sp. M. P. Bryant, Nola Small, Cecelia Bouma and I. M. Robinson 529–537
Complexity of Toxins from *Clostridium septicum* and *Clostridium chauvoei*. Raouf S. Moussa 538–545
Metabolic Studies on *Brucella neotomae* (Stoenner and Lackman). H. S. Cameron and Margaret E. Meyer 546–548
Studies on Factors Affecting the Rapid Germination of Spores of *Clostridium botulinum*. Perry E. Treadwell, Gregory J. Jann, and Anthony J. Salle 549–556
HeLa Cells and *Histoplasma capsulatum*. Phagocytosis and Subsequent Intracellular Growth. Howard W. Larsh and Charles C. Shepard 557–563

No. 6, December 1958

Disaccharide Preference of an Aerobic Cellulolytic Bacterium, *Cellvibrio gilvus* N. Sp. Frank H. Hulcher and Kendall W. King 565–570
Metabolic Basis for Disaccharide Preference in a Cellvibrio. Frank H. Hulcher and Kendall W. King 571–577

Analysis of Action of L-Alanine Analogues in Spore Germination. Carl R. Woese, Harold J. Morowitz, and Clyde A. Hutchison III 578–588
Dissociation in *Pasteurella pestis*: Immunological Comparisons of Smooth and Nonsmooth Variants. Daniel M. Eisler, Gayle Kubik, and Herbert Preston 589–596
Dissociation in *Pasteurella pestis*: Interrelations of Smooth and Nonsmooth Variants. Daniel M. Eisler, Gayle Kubik, and Herbert Preston 597–606
Unidirectional Diffusion of Metabolites of *Serratia marcescens*. M. T. M. Rizki 607–611
Studies in the Physiology and Biochemistry of Penicillin-Induced Spheroplasts of *Escherichia coli*. C. Hurwitz, J. M. Reiner, and J. V. Landau 612–617
Electron Microscope Survey of the Surface Configuration of Spores of the Genus *Bacillus*. D. E. Bradley and J. G. Franklin 618–630
Differential Effect of Hog Gastric Mucin on Properdin and Host Resistance to Infection. Charles W. DeWitt 631–639
Polyphosphate Accumulation and Utilization as Related to Synchronized Cell Division of *Corynebacterium diphtheriae*. Theodore Sall, Stuart Mudd, and Atsushi Takagi 640–645
Microbiological Studies with Thioctic Acid Analogues. I. Inhibitory Effects of 6-Ethyl-8-Mercaptooctanoic Acid and Related Thioctic Acid Analogues for Growth of Microorganisms. Harry P. Broquist and Arthur V. Stiffey 646–650
Microbiological Studies with Thioctic Acid Analogues. II. Enzymatic Evidence for Interference with Acetyl Transfer by 6-Ethyl-8-Mercaptooctanoic Acid. Alberta M. Albrecht and Harry P. Broquist 651–657
Oxidative Assimilation by *Azobacter agilis*. Emmett J. Johnson, J. M. Sobek, and C. E. Clifton 658–661
Detection of Bacterial Gelatinases by Gelatin-Agar Plate Methods. Harry L. Smith, Jr., and K. Goodner 662–665

NOTES:

Nucleic Acid Synthesis in Penicillin-Treated *Alcaligenes faecalis*. Cynthia Lark and Karl G. Lark 666–667
Nucleic Acid Synthesis in Ultraviolet-Irradiated *Bacillus cereus*. Johan H. Stuy 668–669
Simple Method for Separating Leptospirae from Contaminating Microorganisms Marvin B. Rittenberg, William D. Linscott and Meridian Greene Ball 669–670
Erratum 670
Index of Authors 671–673
Index of Date of Issue 673
Index of Subjects 674–681
Contents of Volume ..... iii–vii
Instructions to Authors 3–4